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**Forest  
Service**

Pacific  
Southwest  
Region

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# **Draft Environmental Assessment for the Yuba Trails Enhancement Project**

## **Tahoe National Forest – Yuba River Ranger District**



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# **Yuba Trails Enhancement Project**

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# **ENVIRONMENTAL ASSESSMENT**

## **for the**

### **Yuba Trails Enhancement Project**

**USDA Forest Service – Tahoe National Forest – Yuba River Ranger District**

Project located in Sierra County, California

## **Chapter I – Purpose, Need, and Proposed Action**

### **Introduction/Background**

The Forest Service is proposing the Yuba Trails Enhancement Project to: (1) re-route four motorized trail segments; (2) remove three existing unauthorized routes; and (3) construct one connector motorized trail on National Forest System lands on the Yuba River Ranger District of the Tahoe National Forest. These actions are needed to address ongoing soil erosion and potential water quality impacts associated with existing steep, motorized trails and unauthorized routes in this area. The proposed actions would address soil erosion and water quality concerns, provide for a sustainable trail system, improve motorized recreation opportunities, and enhance trail users' experiences.

Downieville, California is a world famous hub for motorcycle and mountain bike trail opportunities available on the National Forest System Lands that surround the town. This project will analyze and document the environmental effects of re-routing four unsustainable routes, removing three existing unauthorized routes and constructing a connector trail.

The Project area is located north of the community of Downieville (T 20 & 21N, R10E & R11E, multiple sections) and entirely within Sierra County. The four proposed motorized trail re-routes and three unauthorized route removals are located within the East and West Yuba Inventoried Roadless Areas. The one proposed motorized connector trails lie outside the Inventoried Roadless Areas. (Please refer to the enclosed map.) The proposed project will result in a net reduction of 1 mile of roads/trails located within the East and West Yuba Inventoried Roadless Area.

### **Purpose and Need**

Over the past several years, motorized recreational use has been steadily increasing in the Project area. This use has created localized impacts for both recreation users and natural resources, including deteriorating conditions of system trails; adverse watershed and soil impacts; and concerns regarding recreational experiences.

The purposes of the Yuba Trails Enhancement Project are to: respond to resource impacts from increasing and changing demands for motorized trail use and other motorized dispersed recreation; ensure the managed trail system is sustainable; and enhance motorized recreation experiences. Implementation of the Project would result in enhanced recreation opportunities and experiences; provide additional outfitter and guiding opportunities; mitigate existing impacts to soil and water resources; and address community interests and public safety. The proposed Project is consistent with

Forest Plan management direction in the *Tahoe National Forest Land and Resource Management Plan* (1990) as amended by the *Sierra Nevada Forest Plan Amendment Record of Decision* (SNFPA ROD 2004).

## **Proposed Action**

The proposed action has three components: (1) four motorized trail re-routes followed by subsequent decommissioning and restoration of the replaced trail sections; (2) removal of three existing unauthorized routes through restoration to a natural state; and (3) construction one connector motorized trail.

### **Trail Re-Routes**

The four proposed motorized trail reroutes are designed to eliminate problems associated with overly steep and heavily eroding portions of the Rattlesnake/Downie River Trail, Pauley Creek Trail, Big Boulder Trail, and Lavezzola Trail as follows:

**Downie River / Rattlesnake Trail** : The Project would re-route approximately 1.5-miles of the steep existing Rattlesnake trail segment (25-40% grades) that is intercepting a drainage, and replace it with an approximately 2.5 miles of multiple use motorized single track trail with a grade of 5-10%. With the proposed re-route, the entire trail length will be called the Downie River Trail. The Project would decommission and restore the existing 1.5-mile steep section of trail (25-40% grades).

**Pauley Creek Trail** : The Project would re-route approximately 0.5 miles of a steep existing trail segment (25-35% grades) that climbs straight up and replace it with approximately 0.5 miles of multiple use motorized single track trail with grades of 5-10%. The Project would decommission and restore 0.5 miles of a steep existing section of trail (25-35% grades).

**Lavezzola Trail**: The Project would re-route approximately 2 miles of a steep existing trail segment (25-40% grades) that climbs straight up and replace it with approximately 3 miles of multiple use motorized single track trail with grades of 5-10%. The Project would decommission and restore the 2-mile steep existing section of trail (25-40% grades).

**Big Boulder Trail**: The Project would re-route approximately 1 mile of a steep existing trail segment (25-40% grades) that climbs straight up and replace it with approximately 1 mile of multiple use motorized single track trail with grades of 5-10%. The Project would decommission and restore the 1-mile steep existing section of trail (25-40% grades).

### **Connector Trail**

**Second Divide Trail**: This proposed 0.15-mile connector trail is designed to enhance the safety and experience of users on First, Second and Third Divide Trails by building a trail that bypasses the County Road that connects the two popular trails. Currently a legal connection for motorcycle users does not exist as green sticker motorcycles are not allowed on roads not classified for their use under the *Tahoe National Forest Motorized Travel Management Record of Decision* (September

2010). This connector trail would also improve the user experience by creating a continuous single track trail that extends Second Divide Trail with a connection to First Divide Trail. The new multiple use motorized single track trail would be designed with grades of 5-10%.

### **Unauthorized Route Restoration**

The unauthorized route to Sisson Mine, an unauthorized route near Hawley Meadow (old Gold Valley), and unauthorized route near Butcher Ranch would be removed and the land restored to a natural grade. These routes are not needed for public use and are unsustainable. Approximately 3 miles of unauthorized routes would be restored to natural conditions.

All proposed activities would adhere to the Standards and Guidelines contained within the *Tahoe National Forest Land and Resource Management Plan* (1990) as amended by the *Record of Decision for the Sierra Nevada Forest Plan Amendment* (2004). Future projects would require additional public involvement, site-specific environmental analyses, and separate decisions as required under NEPA.

### **Public Involvement/Scoping**

This project was originally published in the Tahoe National Forest's quarterly *Schedule of Proposed Actions* (SOPA) in January, 2018, and every issue since that time. A public scoping letter was mailed to numerous potentially interested and/or affected individuals on December 20, 2017. A public notice was also put in Grass Valley's *The Union Newspaper*, published on December 28, 2017, and in Downieville's *Mountain Messenger* on December 28, 2017. As a result of this public scoping, Yuba River Ranger District received a total of two letters of comment. These comments were used to identify potential issues associated with the proposed action.

### **Issues**

Issues have a cause-effect relationship to the actions under consideration. An issue statement describes a specific action and the environmental effect(s) expected to result from that action. Cause-effect statements provide a way to understand and focus on the issues relevant to a particular decision. Issues serve to highlight effects or unintended consequences that may occur from the proposed action and alternatives, giving opportunities during the analysis to reduce adverse effects and compare trade-offs for the decision maker and public to understand. Issues are identified during scoping early in the process to help set the scope of the actions, alternatives, and effects to consider.

The scoping input letters received were reviewed by the Responsible Official. All comments received through scoping consisted of questions about the proposal and/or recommendations for designing the proposed action. The Responsible Official determined that scoping input received on the Yuba Trails Enhancement proposed action did not raise issues that would require development of additional alternatives or additional environmental effects analyses. The comments received during scoping are addressed with explanations and responses in Appendix B of this EA.

## **Decision to be Made**

The Responsible Official will decide whether to approve the proposed action as presented in this document or choose to not implement any of the actions proposed. The decision would likely be made in late- 2018, and implementation beginning in either 2019 or the following year.



## Chapter II – Alternatives Considered

### Alternatives

#### Alternative A – Proposed Action

This alternative is the Proposed Action, as presented in Chapter 1 (See page 4) of this environmental assessment. Below is a summary of the project treatments.

**Table 2-1. Alternative A – Yuba Trails Enhancement Project Treatment Summary.**

Treatment	Total Treatment Miles
Trail Relocation and Improvement (Realignment)	5
Removal of existing unauthorized routes (Decommission)	3
<b>Total Reduction of Roads and Trails</b>	<b>8</b>

Treatment	Total Treatment Miles
New Sustainable Alignment (Construction)	7
New Connector Trail (Construction)	.15
<b>Total New Construction</b>	<b>7.15</b>

All proposed activities would adhere to the Standards and Guidelines contained within the *Tahoe National Forest Land and Resource Management Plan* (1990) as amended by the *Record of Decision for the Sierra Nevada Forest Plan Amendment* (2004). Proposed management activities are consistent with the applicable forest-wide and land allocation-specific standards and guidelines described in the 2004 SNFPA ROD (pp. 49 through 66). Alternative A is consistent with the *Tahoe National Forest Land and Resource Management Plan* (LRMP), as amended (36 CFR 219.10 (e)<sup>1</sup>).

#### Alternative B - (No Action)

This alternative does not implement any of actions proposed. No new trail construction would be accomplished. No trail relocation/realignment would be completed. No road decommissioning would be completed.

Under this alternative, routine land stewardship, including fire suppression, minimal road and/or trail maintenance, or other administrative activities that address threats to life and property, would continue.

### Management Requirements under Alternative A

In response to both internal and public comments on the proposal, management requirements were developed to reduce or prevent some of the potential impacts the various proposed actions may cause. The following management requirements would be applied to Alternative A.

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<sup>1</sup> 1982 Planning Rule under which the existing Forest Plan was developed.

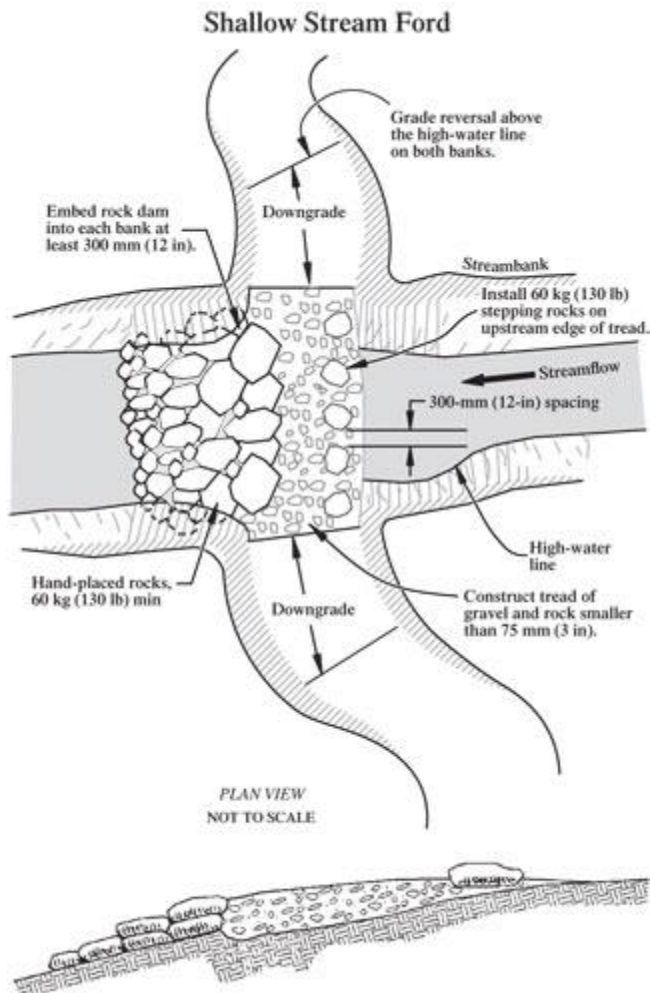
**Table 2-2. Yuba Trails Enhancement Project Management Requirements**

Area of Concern	Management Requirement Designed to Reduce or Prevent Undesirable Effect	Responsible Persons
<b>Nonnative invasive Plants (NNIPs) - Prevention</b>	All equipment and vehicles (Forest Service and contracted) operating off-road must be free of invasive plant material before moving into the project area. Equipment will be considered clean when visual inspection does not reveal soil, seeds, plant material or other such debris. Cleaning shall occur at a vehicle washing station or steam-cleaning facility before the equipment and vehicles enter the project area.	District NNIP coordinator and district trails manager.
<b>Nonnative invasive Plants (NNIPs) Prevention</b>	All gravel, aggregate, fill, mulch, topsoil, erosion control materials and other construction materials are required to be weed-free. When possible, use onsite materials, unless contaminated with invasive species. Otherwise, obtain weed-free materials from sources that have been certified as weed-free.	District NNIP coordinator and district tails manager
<b>Nonnative invasive Plants (NNIPs) Prevention</b>	Any infestations discovered prior to or during project implementation should be flagged and avoided. Report new infestations to District Botanist.	District NNIP coordinator and district tails manager
<b>Nonnative Invasive Plants (NNIPs) - Prevention</b>	Minimize the amount of ground and vegetation disturbance. As necessary, reestablish vegetation on disturbed bare ground to reduce invasive species establishment; revegetation is especially important in staging areas.	District NNIP coordinator and district tails manager
<b>Sensitive Plant Management Conservation</b>	For projects involving ground disturbance or use of imported materials, notify the District Botanist after the project is completed, so that the project area can be monitored for invasive plants subsequent to project implementation (as funding allows).	Zone botanist and district rails manager
<b>Sensitive Plant Management Conservation</b>	Flag and avoid known occurrences of Hutchison's lewisia ( <i>Lewisia kelloggii ssp. hutchisonii</i> ) and buffer ground disturbance by at least 50 feet. Known occurrences located on Downie and Lavezzola re-route.	Zone botanist and district rails manager

Area of Concern	Management Requirement Designed to Reduce or Prevent Undesirable Effect	Responsible Persons
<b>Sensitive Plant Management Conservation</b>	No staging of equipment or personal within known occurrences of Hutchison's lewisia ( <i>Lewisia kelloggii</i> ssp. <i>hutchisonii</i> ). Known occurrences located on Downie and Lavezzola re-route.	Zone botanist and district trails manager
<b>Sensitive Plant Management Conservation</b>	Leave brush and obstructions between know occurrences of Hutchison's lewisia ( <i>Lewisia kelloggii</i> ssp. <i>hutchisonii</i> ) and trail within 50 foot buffer with sign indicating botanical resource protection. If feasible place trail downhill of suitable habitat near Downie re-route to deter shortcuts or unauthorized off trail use through suitable habitat surrounding known occurrence.	Zone botanist and district trails manager
<b>Sensitive Plant Management Conservation</b>	Additional survey and undetected occurrences prior to implementation. Big Boulder and 2 <sup>nd</sup> Divide Extension proposed trails will be surveyed in 2018 due to changes in 2017 project design. Any additional TES or TNF watchlist botanical species or other botanical resources discovered prior to implementation will be flagged and avoided until assessed for impacts by District Botanist.	Zone botanist and district trails manager
<b>Wildlife/Watershed - BMPs</b>	Implement project-specific Best Management Practices (BMPs) that include measures to minimize sedimentation into creeks and maintain water temperature and water quality.	District Biologist and District Trails Manager
<b>Wildlife – California Spotted Owl</b>	To avoid disturbances to spotted owls during the breeding season, Limit the Operating Period from March 1 through August 15 for trail construction and decommissioning along the Lavezzola Trail re-route, unless surveys are conducted to protocol, and it is determined that this is no longer needed.	District Biologist and District Trails Manager
<b>Wildlife – Northern Goshawk</b>	To avoid disturbances to northern goshawks during the breeding season, Limit the Operating Period from February 15 through September 15 for trail construction and decommissioning along the Butcher Ranch Trail re-route, unless surveys conducted to protocol determine that this is no longer necessary	District Biologist and District Trails Manager
<b>Wildlife – Aquatic Resources</b>	To avoid impacts to aquatic species, construct a bridge across the perennial crossing at Rattlesnake Creek and at the bottom of the re-route across Lavezzola Creek.	District Biologist and District Trails Manager

Area of Concern	Management Requirement Designed to Reduce or Prevent Undesirable Effect	Responsible Persons
<b>Wildlife – Snags and Trees</b>	Where practicable, locate trail to avoid the need to fall large trees (greater than 30" dbh) and snags (greater than 24" dbh), or those displaying wildlife use (cavities, nests). Fall and leave hazardous snags to recruit dead wood.	District Biologist and District Trails Manager
<b>Wildlife – TES Concerns</b>	If new Threatened, Endangered, or Forest Service Sensitive (TES) species are listed or discovered, or nesting TES are found within 0.25 mile of activities, a limited operating period will be implemented as recommended by a qualified biologist.	District Biologist
<b>Watershed, Soils, &amp; Aquatic Resources – Shallow stream fords.</b>	<p>When constructing shallow stream fords, locate in shallower portions of the stream. The approaches should climb a short distance above the typical high water line so that water is not channeled down the tread. Avoid locations where the stream turns, because the water will undercut approaches on the outside of a turn.</p> <p>The tread in the ford should be level, ideally made of rock or medium sized gravel that provides solid footing. The plan is to even out the waterflow through the ford so the gravel-sized material isn't washed away, leaving only cobble or boulders. See figure, below.</p>	Trail Construction Team
<b>Soils and slope stability – Trail Construction</b>	Where mechanical equipment planned on hillslopes greater than 55 percent, survey trail corridor for mass wasting potential. Use mechanical equipment only where there is low potential for mass wasting.	Trail Construction Team, Earth Scientist

Area of Concern	Management Requirement Designed to Reduce or Prevent Undesirable Effect	Responsible Persons
<b>Watershed, Soils, &amp; Aquatic Resources</b> – Trail approaches to watercourse crossings.	<p>Design watercourse crossings to avoid diversion of flow down the trail should the crossing fail.</p> <p>Where possible, make crossing approaches short and level, or reverse the grade if possible.</p> <p>Install cross drainage (cut-off waterbreaks) at crossings to prevent water and sediment from being channeled directly into watercourses.</p> <p>Locate cut-off waterbreaks as close to the crossing as possible without being hydrologically connected to the watercourse.</p> <p>A armor steep crossing approaches with stable aggregate or trail-hardening materials.</p> <p>Where possible (for example, at bridges or arch culverts), reverse the grade of the crossing approaches so runoff drains away from the watercourse.</p>	Trail Construction Team
<b>Watershed, Soils, &amp; Aquatic Resources</b> – Trail Decommissioning	<p>On decommissioned trail sections, maintain at least 70 percent effective soil cover prior to winter precipitation.</p>	Trail Construction Team



In addition to the above listed management requirements, the following BMPs to protect water quality and riparian resources, listed below, shall be followed.

**Table 2-3. Yuba Trails Enhancement Project Best Management Practices (BMPs)**

**Summary of Applicable BMPs**

Best Management Practice	Project Application Method
<b>Timber Management</b>	
1.3 Determining Surface Erosion Hazard	Where the post-project hazard is predicted to be “moderate,” an onsite evaluation is conducted to determine the need for erosion control measures. Where the hazard is predicted to be “high,” or “very high,” erosion-control measures are necessary to reduce the potential risk of accelerated erosion to a low or moderate level.

### **Summary of Applicable BMPs**

<b>Best Management Practice</b>	<b>Project Application Method</b>
1.4 Using Sale Area Maps and/or Project Maps for Designating Water-Quality Protection Needs	Water-quality protection features will be designated on the sale area map or project map.
1.5 Limiting the Operating Period of Project Activities	“Limited Operating Period,” will be used in a to limit the operation to specified periods when adverse environmental effects are unlikely. This can be used to close down operations due to the rainy season, high water, and other adverse operating conditions, to protect resources.
1.6 Protecting Unstable Lands	Where unstable lands are delineated, they are taken out of suitable forest lands and are reclassified as unsuitable forest land.
1.13 Erosion Prevention and Control Measures during project implementation	Equipment will not be operated when ground conditions are such that excessive damage will result. The kinds and intensity of control work required will be adjusted to ground and weather conditions, with emphasis on the need to control overland runoff, erosion, and sedimentation. Erosion-control work required by the contract will be kept current. At certain times of the year this means daily, if precipitation is likely, or at least weekly when precipitation is predicted for the weekend.
1.19 Streamcourse and Aquatic Protection	Conduct management actions to provide unobstructed passage of stormflow and control sediment and other pollutants entering streamcourses.
2.5 Water Source Development and Utilization	Regular monitoring of water supply developments, during construction and use, and enforcement of contract and sale clauses, specifications, and restrictions is the responsibility of inspectors, contracting officer representatives, engineering representatives, sale administrators, and force account crew foreman. Use techniques listed. Develop and implement Erosion Control Plan for water supply site construction and us.
2.8 Stream Crossings	See listed techniques. The forest hydrologist works in conjunction with engineering and administrative personnel to provide additional monitoring and evaluation during implementation, as needed.
2.11 Equipment Refueling and Servicing	Temporary refueling and servicing will occur only at approved locations, which are well away from riparian resources. Develop or use an existing fuel and chemical management plan.

### **Summary of Applicable BMPs**

<b>Best Management Practice</b>	<b>Project Application Method</b>
2.13 Erosion Control Plan	An erosion control plan will be developed to minimize sediment during and after project activity has been completed.
5.1 Soil-disturbing Treatments on the Contour	Following NEPA procedures and using interdisciplinary team input, project planners will be responsible for formulating the appropriate contract provisions and/or mitigation measures for the contract, or project plans.
5.2 Slope Limitations for Mechanical Equipment Operation	Project planners will be responsible for ensuring that appropriate equipment operation provisions are included in the decision and activity-controlling documents.
5.6 Soil Moisture Limitations for Mechanical Equipment Operations	The project coordinator will determine when optimum soil conditions exist, and administer the operation to prevent adverse soil effects, in addition to suspending, or terminating operations for contracted projects as soil moisture conditions warrant.
7.8 Cumulative Off-site Watershed Effects	CWE susceptibility evaluations and development of mitigation measures are accomplished through the environmental documentation process, using an interdisciplinary approach, guided by the Regional methodology.

### **BMP 4.7 - Best Management Practices for Off-Highway Vehicle Facilities and Use (BMPs 4.7.1 to 4.7.9)**

Over the past few decades, the availability and capability of off-highway vehicles (OHV) have increased tremendously, as has the intensity of OHV use on NFS lands. While these vehicles have provided new recreational opportunities and access to otherwise remote locations, this increase in OHV use has the potential to impact water resources.

1. OHV use near water bodies, particularly at stream crossings, has the potential to:
  - a. Deliver sediment, particularly during storm events
  - b. Cause vertical and lateral erosion of stream channels
  - c. Destroy or weaken riparian vegetation, compromising stream-bank stability and increasing water temperature
  - d. Pollute waters with petroleum and chemical products and other organic and inorganic waste, including human pathogens



2. Careful and wise management of OHV use can mitigate these impacts. The purpose of this set of BMPs is to control nonpoint source pollution that may occur because of OHV recreation activities on NFS lands. The types of OHV activities that could directly or indirectly affect water quality include:

- a. Trail planning
- b. Trail location and design
- c. Trail construction and reconstruction
- d. Operations and maintenance
- e. Monitoring
- f. Restoration of OHV-damaged areas.

3. This set of BMPs applies to OHV trails, with the exception of BMP 4.9, which is specific to concentrated-use area management. For the purpose of this set of BMPs, the term “OHV Trail” means trails managed for OHV use. The three types of OHV trails are:

- a. Single-track trails - 12 to 24 inches in width, used by off-highway motorcycles
- b. Double-track trails - 50 inches or less in width, used by off-road motorcycles and all-terrain vehicles
- c. Four-wheel drive or high-clearance trails - 50 inches or greater in width, used by off-road motorcycles and all-terrain vehicles, side-by side utility terrain vehicles, and high-clearance four-wheel drive vehicles.

Best management practices for roads utilized by OHVs, such as high-clearance vehicle roads (Maintenance Level - 2), are covered under the set of roads BMPs. It is important to recognize

the distinction between OHV trails and OHV routes on roads, because their design, construction, management, and potential impacts to water quality are quite different. This distinction is with the full acknowledgement that a large percentage of OHV use occurs on Maintenance Level - 2 roads, and that many OHV trails have evolved from old roads or firebreaks.

Sediment is by far the primary pollutant associated with OHV activity, although human waste and petroleum products from concentrated use areas can be pollutants locally. Discharges of sediment into California’s waters that are associated with OHV activity are caused by accelerated soil erosion.

Trails are linear features that concentrate runoff. When runoff concentrated on a trail flows directly to a watercourse or water body, the trail becomes part of the drainage network, and creates hydrologic connectivity. OHV trails located near watercourses and water bodies have a high potential for hydrologic connectivity. Consequently, watercourse crossings and OHV trails located near them have the greatest risk for sediment delivery from off-highway vehicle activity.

Trails can also alter natural drainage patterns by intercepting, diverting, blocking, and concentrating surface and subsurface flows. Proper off-highway vehicle management, including trail location, design, construction, and maintenance, can reduce the impact to natural hydrologic functions and water resources.

Drainage treatments such as out-sloping, inside ditches, and crowned prisms are effective on roads, but are not typically effective on OHV trails. OHV trails typically occur in native soil material that easily erodes. This is in contrast to roads, which are constructed from deeper sub-soil or regolith. Roads are also typically wider, have larger cut and fill slope, a more compacted prism, and generally have gradients that are less steep than OHV trails. Watercourse crossings on OHV trails are not designed and constructed the same way watercourse crossings for roads are. Because of these differences, the potential for sediment delivery from OHV trails is not the same as for OHV routes on roads, and BMPs developed for OHV trails differ from those developed for roads.

Additional site-specific practices may be needed for water bodies listed pursuant to Clean Water Act section 303(d) as being impaired by sediment, siltation, or turbidity; and for key watersheds in the areas covered by the Northwest Forest Plan and the Sierra Nevada Framework.

Authorities

The Travel Management Rule (36 CFR, Parts 212, 251, and 261) adopted in 2005, and the Forest Service Manual and Forest Service Handbook provide the framework for managing OHV use on

NFS lands. These resources contain the mandate for the Forest Service to designate routes for motor vehicle use by vehicle type, and if applicable by time of year, and to identify the route designations and seasonal restrictions on a motor vehicle use map.

Both the Northwest Forest Plan and the Sierra Nevada Framework incorporate Aquatic Conservation Strategies that encourage identification of key watersheds on NFS lands where protection of aquatic and riparian resources is a priority.

The Forest Service receives grant funding from the California State Parks Off-Highway Motor Vehicle Recreation Division grant program to help manage, operate, maintain, and develop OHV use on NFS lands. Where applicable, the Forest Service will use these BMPs to achieve the California State Parks, 2008 Soil Conservation Standard associated with receiving monies from the California OHV Trust fund. The soil standard specifically requires management of OHV activities to avoid impacts to both on-site and off-site resources, including water quality.

This Water Quality Management Handbook provides specific practices to protect and restore water quality while providing opportunities for OHV recreation.

Objective: To use the travel management planning processes, including travel analysis, to develop measures to avoid, minimize, and mitigate adverse impacts to water, aquatic, and riparian resources during OHV management activities, and to identify restoration for OHV-damaged areas and trails not designated for use.

Explanation: The amount, type, and location of OHV trails are determined through various planning processes. OHV trail planning includes travel analysis as well as trail management at the project level. Planning occurs at scales that can range from forest wide assessments and plans, to watershed-scale analyses, to project-level trail activities. During planning, potential effects on water, and on aquatic and riparian resources are identified, and protection and mitigation measures are proposed.

Trail management objectives are developed to define the type of recreation experience each trail is designed to provide, and to provide direction on management of the trail. In addition to guiding trail management at the site-specific scale, TMOs also document Forest-wide trail maintenance needs and identify the potential for environmental effects and conflicts with other resources.

The risk from OHV trail management activities can be reduced by using the appropriate techniques from the following list, adapted as needed to local site conditions.

Implementation:

1. Conduct travel analysis to determine the appropriate trail system for the recreational objective.

Plan trails to:

- a. Minimize the number of stream crossings
  - b. Avoid locations near wetlands (for example, seeps, springs, marshes, and wet meadows)
  - c. Favor existing trails over new construction when less damage to water quality will occur
2. To the degree feasible, locate new construction on natural benches, flatter slopes, and stable soils. Avoid locating new trails on:
    - a. Areas prone to mass wasting
    - b. Slopes steeper than 55 percent
    - c. Slopes steeper than 45 percent where the erosion potential is high or extreme

Limit steep pitches to less than 200 feet where possible.

3. Identify trail segments causing adverse impacts to water resources and prioritize mitigation measures such as:
  - a. Relocate existing trails or trail segments that are in high-risk locations, including SMZs, riparian areas, and meadows, to restore surface and subsurface hydrologic function
  - b. Reconstruct trails to improve, modify, or restore effective drainage
  - c. Upgrade stream crossings

- d. Develop or update a trail management objective for each trail:
- e. Define the recreation experience and level of difficulty the trail is designed to provide.
- f. Identify current and future needs and uses of each authorized trail in the trail management objective.
- g. Determine whether existing trail design standards are adequate to support the defined recreational experience, and whether impacts to water, aquatic, and riparian resources are likely to result from not following trail management objectives.
- h. Identify trails that are managed differently and/or are serving purposes other than those identified in trail management objectives. Modify the objective to match the intended use and management of the trail.
- i. Operate the trail as intended by the trail management objectives until they are revised and/or the trail is reconstructed to accommodate different uses.

#### **BMP 4.7.2 - Location and design**

Objective: To reduce the risk that sediment originating from designated OHV trails and OHV areas will enter watercourses and water bodies by locating OHV trails to minimize hydrologic connectivity, and by incorporating drainage structures into trail design to disperse concentrated runoff.

Explanation: Proper on-site location and design of OHV trails are essential, particularly at stream crossings (see BMP 4.3).

The amount of sediment delivered to a water body from an OHV trail is affected by runoff concentration and hydrologic connectivity. Properly located and designed drainage structures disperse concentrated runoff. Typically, runoff as overland flow will not penetrate a buffer strip, but runoff concentrated in rills or gullies will.

1. The potential to deliver sediment originating from OHV trails and OHV areas to watercourses and water bodies is a function of the:
  - a. number, location, and design of watercourse crossings
  - b. volume and energy of concentrated flow leaving the trail or area
  - c. ability of the intervening terrain to absorb or disperse concentrated flow, including slope gradient and surface cover
  - d. distance between the trail and the receiving water body
  - e. inherent erodibility of the soil

The first four of these five factors determine the hydrologic connectivity between the trail and the watercourse or water body. Watercourses are so important in managing the effects of OHV use on water quality that they have a BMP of their own (BMP 4.3).

Techniques included in this BMP are intended to improve drainage and reduce or eliminate the hydrologic connectivity of trails and watercourses. The risk from OHV use can be managed by using the appropriate techniques from the following list, adapted as needed to local site conditions.

## 2. Implementation Techniques:

### Trail Location

- a. Locate trails and drainage structures to minimize hydrologic connectivity.
- b. Limit the number of watercourse crossings to those needed to meet the recreational objective.
- c. Maximize the filter distance between the trail and the water body.
- d. Locate drainage structures where dispersion or absorption of runoff is effective.
- e. Avoid sensitive areas such as riparian areas, wetlands, meadows, bogs, fens, inner gorges, and unstable landforms.
- f. Avoid the capture, diversion, and/or concentration of runoff from slopes adjacent to OHV trails.
- g. Locate steep trail segments on well-armored locations than can sustain traffic without accelerated erosion.

## 3. Trail Design to Reduce Potential for Discharge of Pollutants to Surface Waters

- a. Design and space trail drainage structures to remove storm runoff from the trail surface before it concentrates enough to initiate rilling.
- b. Design trails to dissipate intercepted water by rolling the grade.
- c. Where trails cannot be effectively drained by rolling the grade or using reverse grades, provide trail drainage using OHV rolling dips as specified in Rolling Dips for Drainage of OHV Trails, USDA-Forest Service, Pacific SW Region, January, 2006.
- d. Wherever possible, incorporate sediment basins at OHV rolling dip outlets instead of lead off ditches.
- e. Where sediment basins cannot be installed, provide energy dissipaters at OHV rolling dip outlets.

- f. Design trails to be no wider than necessary to provide the recreation experience defined in the trail management objective.
- g. Incorporate design elements that discourage off-route use (for example, taking shortcuts, cutting new lines).
- h. Extend drainage outlets beyond the toe of fill or side-cast.
- i. Install aggregate, paver blocks, or other surfacing treatment on tread segments that are steep, erodible, or heavily traveled.

### **BMP 4.7.3 - Watercourse Crossings**

Objective: To prevent or minimize the discharge of sediment into water bodies when locating, designing, constructing, reconstructing, and maintaining watercourse crossings.

Explanation: The importance of watercourse crossings in managing the effects of OHV use on water quality cannot be overemphasized. Of the pollutants generated by OHV use, sediment has by far the greatest volume. The greatest potential for sediment delivery is at and near watercourse crossings where the potential for hydrologic connectivity is high. The approaches to watercourse crossings are typically constructed in native soils that can erode and deliver sediment to channels.

Typical OHV watercourse crossings include low-water crossings, fords, bridges, arched pipes, culverts, and permeable fills. Crossing materials and construction vary based on the type of trail and kind of use. To minimize impacts to water quality, design new crossings to provide for the unimpeded flow of water, bed-load, large woody debris, and aquatic organisms. Watercourse crossings must be constructed with minimal disturbance to the streambed and to surface and shallow groundwater resources.

The approaches to watercourse crossings and fill-slopes are especially important. All sediment resulting from erosion on these surfaces is delivered directly into the watercourse.

Construction, reconstruction, and maintenance of watercourse crossings often require equipment to be in and near streams, lakes, and other aquatic habitats. Such disturbance can increase the potential for accelerated erosion and sedimentation by destabilizing stream banks or shorelines, removing vegetation and ground cover, and by exposing and compacting the soil. Permits, including Section 404 permits administered by the U.S. Army Corps of Engineers and Section 401 Water Quality Certifications administered by Regional Water Quality Control Boards may be required for in-stream work associated with stream-crossing construction and maintenance projects.

The risk of sediment delivery at watercourse crossings can be managed by using the appropriate techniques from the following list, adapted as needed to local site conditions. Location, construction, and maintenance of watercourse crossings, and assessment of watercourse crossing condition, require consultation with qualified personnel.

## 1. Implementation:

### Crossing Location--

- a. Locate new OHV trails to limit the number of watercourse crossings to those necessary to meet planned activity objectives (see also BMP 4.1).
- b. Avoid long, steep OHV trail segments on approaches to watercourse crossings.
- c. Orient stream crossings perpendicular to the channel in straight and resilient stream reaches.

## 2. Trail Approaches to Watercourse Crossings—

- a. Where possible, make crossing approaches short and level, or reverse the grade if possible.
- b. Install cross drainage (cut-off water breaks) at crossings to prevent water and sediment from being channeled directly into watercourses.
- c. Locate cut-off water breaks as close to the crossing as possible without being hydrologically connected to the watercourse.
- d. Armor steep crossing approaches with stable aggregate or trail-hardening materials.
- e. Where possible (for example, at bridges or arch culverts), reverse the grade of the crossing approaches so runoff drains away from the watercourse.

## 3. Design of Watercourse Crossings--

- a. Design crossing approaches and nearby drainage structures to minimize hydrologic connectivity.
- b. Design watercourse crossings to avoid diversion of flow down the trail should the crossing fail.
- c. Rocked diversion potential prevention dips and rock armoring of downstream crossing fill will be used to minimize potential for failure of trail-stream crossings.
- d. Design watercourse crossings for a 100-year storm event, to allow for unobstructed flow including bed-load and organic debris, and to provide for passage of desired aquatic and terrestrial organisms.
- e. Harden crossing approaches as needed to minimize soil displacement by traffic.
- f. Place stable materials below the outlets of cut-off water breaks to dissipate energy.
- g. Set crossing bottoms at natural levels of channel beds.

- h. Harden fords with gravel or cobble of sufficient size and depth to prevent movement by traffic.
  - i. Construct watercourse crossings to sustain bank full dimensions of width, depth and slope, and to maintain streambed and bank resiliency.
  - j. Instead of pipe culverts, use bridges, bottomless arches, or buried pipe-arches for watercourses with identifiable floodplains and elevated trail prisms.
  - k. Cross wet areas with naturally high water tables with permeable fills, perched culverts, and/or culvert arrays to maintain hydrologic function.
  - l. Use Forest Service design specifications for bridges.
4. Construction of Watercourse Crossings--
- a. Conduct construction operations during the least critical periods for water and aquatic resources (usually during low-water conditions and non-spawning/breeding seasons).
  - b. Disturb as little area as possible when crossing watercourses.
  - c. Minimize excavation of stream banks and riparian areas during construction.
  - d. Keep excavated materials out of channels, floodplains, wetlands, and lakes.
  - e. Stabilize adjacent areas disturbed during construction.

#### **BMP 4.7.4 - Construction, reconstruction**

Objective: To prevent or minimize the discharge of sediment into water bodies during construction, reconstruction, and realignment of OHV trails.

Explanation: Vegetation and ground cover is removed during trail construction and reconstruction, exposing the surface and subsurface soil to erosion. Temporary and long-term erosion control measures are necessary to minimize erosion and sediment delivery. The risk of erosion and sediment delivery from trail construction and reconstruction activities can be managed by using the appropriate techniques from the following list, adapted as needed to local site conditions.

Implementation:

Develop and implement an erosion and sediment control plan that describes:

1. Amount of vegetative clearing and amount of soil material to be moved
2. Proposed erosion control measures to prevent soil detachment and mobilization
3. Proposed sediment control measures to capture mobilized sediment



#### 4. Proposed sequence of implementation for erosion and sediment control treatments

Maintain erosion and sediment control measures to function effectively to prevent discharges of pollutants to surface waters throughout the project area during trail construction and reconstruction.

Keep erosion and sediment control measures sufficiently effective during ground disturbance to allow rapid closure and site stabilization if weather conditions deteriorate. For each project, specify a rainfall probability threshold (generally 30 to 50 percent, based on National Weather Service local forecasts) at which wet-weather sediment control measures will be installed.

Complete all necessary stabilization measures prior to predicted precipitation that could result in surface runoff.

Complete erosion and sediment control treatments before leaving project areas for the winter or rainy season.

Do not operate equipment when ground conditions could result in excessive rutting, or runoff, that could deliver sediment directly to watercourses or water bodies.

When constructing trails near SMZs, do not permit side casting of soil into the SMZ.

Windrow slash and organic litter at the base of fill slopes to trap sediment.

Construct OHV rolling dips when soil moisture is sufficient to allow adequate compaction of OHV rolling dip drainage structures.

Close newly constructed trails for one season to allow consolidation of soils in treads and drainage structures, so treads and structures can better withstand OHV traffic.

#### **BMP 4.7.5 - Monitoring**

Objective: To reduce the risk of sediment delivery to water, aquatic, and riparian resources by identifying watercourse crossings and OHV trail segments in need of maintenance, by setting priorities for maintenance, and by identifying OHV areas and trails that require closure and restoration.

Explanation: The Forest Service will schedule systematic monitoring of OHV trails, activities and effects to detect existing and probable impacts to water quality, aquatic and riparian resources. If adverse water-quality effects are occurring, or there is a potential for substantial adverse impacts to water quality, the Forest Service will take immediate corrective action. Corrective actions may include, but are not limited to:

1. Temporary or permanent erosion and sediment control treatments
2. Barriers and signing to redistribute use
3. Temporary closure of trails or areas until completion of corrective action

4. Partial or total closure and restoration of trails or areas
5. Reduction in the amount, type, or season of OHV use

**Implementation:**

Monitoring specific to OHV trails is included here and in chapter ### of this Water Quality Management Handbook.

Conduct G-Y-R Trail Condition monitoring as described in Revised OHV Trail Monitoring Form (GYR Form) and Training Guide, USDA-Forest Service, Pacific SW Region, July 30, 2004, to identify trails and watercourse crossings in need of maintenance and to prioritize maintenance activities.

Evaluate all watercourse crossings rated “red” during the G-Y-R Trail Condition Monitoring in consultation with a qualified watershed specialist.

Schedule G-Y-R Trail Condition Monitoring so high-risk and high-maintenance trails are monitored annually; schedule the monitoring of stable trails less frequently, but not less than every 3 years.

Monitor a 2.percent sample of trails each year using the Trail Assessment and Condition Survey (TRACS) protocol.

Monitor the effectiveness of the OHV BMPs using the established the Pacific Southwest Region BMP effectiveness monitoring program.

During routine inspections of OHV trails and while conducting photo point monitoring, use a standardized form to document and report newly created unauthorized OHV use, and trail segments with potential water-quality impacts.

Temporarily close trails that pose immediate significant threats to water quality. As a minimum, install temporary erosion and sediment control treatments prior to the winter season.

Permanently close and restore trails that cannot sustain OHV use without causing adverse effects to the beneficial uses of water per Water Quality Management Handbook objective 2 (page 8).

#### **BMP 4.7.6 - Maintenance and Operations**

**Objective:** To prevent or minimize discharges of sediment into watercourses and water bodies by maintaining OHV trails and associated drainage structures.

**Explanation:** OHV trails are linear features constructed in native soil that concentrate runoff. Except for occasional hardened segments, trails are not typically surfaced with aggregate. In addition, normal OHV traffic tends to create an outside berm along the tread. Due to the presence of this berm, and to gradients typically steeper than roads, runoff from trails cannot be readily drained by crowning or out-sloping as it can for roads. Drainage and erosion control facilities cease to function if they are worn down by

continued traffic. These factors make periodic maintenance and field inspection critically important in minimizing the impacts of OHV use on water quality.

Trail drainage systems may further increase hydrologic connectivity if they deteriorate because of use, weather, or inadequate maintenance. Trail drainage facilities may become inadequate after wildfires or extreme precipitation events due to increased surface runoff, loss of vegetative cover, and stream bulking. New springs and seeps occasionally saturate trails after the occurrence of a wildfire or following unusually wet periods. Timely maintenance can correct these conditions.

Drainage structures constructed with mechanized equipment last longer than hand-constructed drainage. However, trail maintenance with mechanized equipment such as SWECO-type trail tractors and mini-excavators can disturb soil, making it susceptible to erosion. Less aggressive maintenance is often necessary to minimize disturbance of stable sites.

The construction of OHV rolling dips is from native soil material. For these structures to hold up under traffic they need to be well compacted. This requires moist soils and the scheduling of maintenance to exploit the narrow window of time when soil moisture is optimal for compaction.

Obstructions to traffic such as fallen logs and potholes can lead to trail braiding, puddles, and off-trail traffic. Prior to opening trails for use—or periodically for trails open year-round—clearing trails of obstructions can reduce the need for repair and restoration. Volunteers do much of this work.

Trail management objectives define the designed use, type of recreation experience, and the level of difficulty that a trail is designed to provide. It is important to maintain trails to the defined maintenance rotation, designed use and level of difficulty. The deterioration of trails to a more challenging difficulty level due to a lack of maintenance can affect water resources. More challenging trails often produce more sediment.

The effects of trail maintenance activities on water quality are managed by using the appropriate techniques from the following list, adapted as needed to local site conditions.

Implementation:

#### 1. Maintenance Planning

Develop and implement annual maintenance plans based on the results of the G-Y-R and TRACS trail condition surveys and other periodic inspections (see BMP 4.7.5).

Schedule maintenance to maximize the time period when soils are at optimal moisture levels for soil compaction.

#### 2. Inspection

Periodically inspect, monitor, and assess trail condition to assist in setting maintenance priorities (see BMP 4.7.5).

Identify the need for additional drainage structures, spot rocking, or trail hardening to protect and maintain water, aquatic, and riparian resources.

3. After major storm events, to the extent staffing allows, inspect potential problem trails, drainage structures, and runoff patterns and, as needed:

- a. Clean out, repair, or reconstruct drainage structures that are not functioning
- b. Clear the tread of obstructions to traffic that could lead to trail braiding or off-site impacts

#### 4. Maintenance Activities

As per Regional Forester's direction dated November 8, 2002, follow the maintenance standards and guidelines in A Field Evaluation of the Use of Small Trail Tractors to Maintain and Construct OHV Trails on National Forests in California, USDA-Forest Service Pacific SW Region, August 22, 2001. Specifically, these standards and guidelines are:

- a. Use certified operators, or persons under their direct supervision, to operate trail tractors and mini-excavators.
- b. Construct new trails using R-5 design standards.
- c. Close newly constructed trails to all use for one season.
- d. Construct OHV rolling dips using design standards
- e. Before moving equipment in, examine trails to determine the need for maintenance with mechanical equipment.
- f. Lift the blade and walk equipment across sections of trail that need no maintenance.
- g. Examine drainage structures, and the tread between them, for evidence of tread loss before starting maintenance.
- h. At failed drainage structures, determine the cause of failure before starting repairs.
- i. Recycle soil collected in rolling dip outlets into rolling dip structures or back into the trail tread.
- j. Do not blade outside berms off the trail as side-cast; work berms back into the trail tread.
- k. Repair rills and gullies in treads with soil reclaimed from rolling dip outlets or from outside berms, not with soil bladed from the trail tread.
- l. Blade soil sloughed from cutbanks, or from sideslopes above trails, only as needed to maintain a safe trail; do not undercut or blade into cutbanks.
- m. Repair "stutterbumps" by ripping, blading, and compacting the trail tread when soil is moist (except for non-cohesive soils).
- n. Move the smallest amount of soil necessary to meet the maintenance objective.

- o. Defer maintenance on drainage structures, or do hand maintenance, where soil is too dry or too wet for compaction.
- p. Maintain trail surfaces to dissipate intercepted water in a uniform manner along the trail by the use of OHV rolling dips.
- q. Groom trails as needed with a rock rake to keep drainage outlets open.

## 5. Operations

Restrict OHV travel to designated trails or designated motor vehicle use areas prior to opening trails for use, clear obstructions to traffic to avoid braiding.

Close trails or restrict OHV use when the potential for sediment delivery is high or during periods when such use would likely damage the tread or drainage features (also see BMP 4.7.7).

### **BMP 4.7.7 - Wet-weather operations**

Objective: To prevent or minimize the discharge of sediment into water bodies by closing OHV trails to traffic when soil strength is low and trail treads and drainage structures are susceptible to damage.

Explanation: Soil strength decreases as moisture increases. When soil strength is low, OHV traffic can lead to tread failure and damage to drainage structures, including OHV rolling dips. Damage to trail drainage structures increases the risk of sediment delivery to watercourses and water bodies. Soil is easily displaced when soil strength is low. Under these conditions OHV traffic near watercourses and on crossing approaches can result in direct delivery of sediment.

The susceptibility of OHV trails to damage when soil strength is low varies with soil type, amount of traffic, and type of vehicle. Each OHV area has a unique combination of soil types and precipitation patterns that determine the appropriate implementation techniques to minimize impacts to water resources during wet weather.

Implementation: To manage the potential for sediment delivery from OHV use when soils are wet, the Forest Service will use its authority under 36 CFR Section 261 to close designated OHV trails and areas to vehicular travel. This must be done seasonally by a given date, or be based on local conditions such as precipitation, or measurements of soil trafficability. Use the following techniques, as appropriate for local conditions, to manage OHV trail systems under wet weather conditions:

1. Develop a wet-weather management plan.
2. Close trails seasonally for the months when soil moisture is typically high and sedimentation is likely to occur; or
3. Close trails for a core period when soil moisture is expected to be high, and extend the closure period as needed, based on precipitation or soil trafficability, or

4. Determine the levels of soil strength and moisture at which OHV trail damage begins to occur for typical traffic, and close trails when measurements of soil strength predict a high risk of damage to drainage structures and trail treads.

Identify benchmark locations where measurements of precipitation or soil trafficability will be taken to determine when trails will be closed.

Identify trails, or loops of trails, with similar conditions that can be selectively closed.

Identify and reroute or reconstruct trail segments that cause entire trail systems to be closed because they retain moisture longer than is typical for the trail system.

#### **BMP 4.7.8 - Restoration of off-highway vehicle-damaged areas**

Objective: To prevent or minimize the discharge of sediment into watercourses and water bodies by permanently restoring OHV-damaged areas, watercourse crossings, and OHV trails no longer designated for use.

Explanation: Loss of surface duff, litter, and vegetation leaves soils exposed and easily eroded. Ruts and tracks created by OHV traffic are unnatural channels that concentrate surface runoff and increase its erosive power. OHV traffic can also compact soils, causing increased surface runoff.

OHV traffic in wet meadows and marshes damages the root network that stabilizes sensitive soils. This can cause stream incision, which lowers the water table and results in a loss of meadow and riparian vegetation.

OHV-damaged areas, and OHV trails no longer available for use, are identified during the route designation process at the forest and watershed level and during trail condition surveys and monitoring (see BMP 4.5). Identify additional trail segments for restoration when rerouting trails.

Restoration of OHV-damaged areas and closed trails includes activities that stabilize and restore the landscape to a more natural state. Treatments can range from simply scattering slash or raking in duff and litter, to watercourse or meadow restoration, to using heavy equipment to break up compaction, fill in incised trails, reshape the area to its natural contour, and install drainage structures. Planting native vegetation helps stabilize slopes by absorbing the impacts of rainfall and overland flow.

Effective closure from OHV traffic is essential to allow restored sites to recover. Accomplish restoration of OHV-damaged landscapes by using the appropriate techniques from the following list, adapted as needed to local site conditions.

1. Implementation:

- Restoration of Trails and OHV-damaged Areas

When planning the restoration of OHV-damaged trails and areas, consider the following steps taken from Restoration of OHV-damaged Areas - A Ten-Step Checklist, USDA-Forest Service, Pacific SW Region, May 31, 2006:

- a. Identify the source of the problem
- b. Effectively close the area to OHV traffic
- c. Reshape the land surface to its original contour
- d. Disperse concentrated runoff
- e. Prepare the seedbed
- f. Planting or seeding
- g. Stabilize the surface
- h. Signing
- i. Enforcement and monitoring
- j. Remove signs and barriers

Few sites will require all ten steps. A more complete description of each step is included in the report. Additional information on restoring OHV-damaged areas can be found in Restoration of Off-Highway Degraded Landscapes (in press) USDA-Forest Service, San Dimas Technology and Development Center 2010.

## 2. Restoration of Watercourse Crossings

Restoration of watercourse crossings should be done under the direction of—or after consulting—a qualified watershed specialist. A permit may be required if in-channel work is necessary.

When restoring OHV watercourse crossings, follow these general guidelines as appropriate:

- a. Remove all trail-hardening materials and fill, and restore the channel bottom to its natural gradient and width.
- b. If necessary, replace hardening material in the channel with cobble similar in size to the native bed-load.
- c. Restore crossing approaches to ensure that surface runoff does not reach the watercourse.
- d. If necessary to divert runoff from crossing approaches, install cutoff waterbreaks as close to the crossing as feasible without creating hydrologic connectivity.
- e. To the extent possible, reshape the streambanks to their former natural contour.

- f. Stabilize and revegetate the streambanks.



## Chapter III – Environmental Consequences

### Introduction

This chapter discloses the potential consequences or impacts of the alternatives described in Chapter II. Chapter III provides the scientific and analytical basis for the comparison of the environmental consequences of the alternatives summarized in Chapter II.

This chapter discusses the consequences by resource area (i.e., botany, fisheries, fuels, vegetation, wildlife, etc.) as needed that are relevant to the identified important issues, as well as the elements of the finding of no significant impact (FONSI). This chapter compares the consequences of the alternatives, and provides evidence and analysis to determine whether to prepare an environmental impact statement or a finding of no significant impact. The specialist's reports, mentioned and/or incorporated by reference in this document, contain detailed analysis of the consequences of the alternatives. They are located in the project file at the Yuba River Ranger District and are available upon request.

### **Effects relative to Finding of No Significance Impact (FONSI) elements.**

In 1978, the Council on Environmental Quality published regulations for implementing the National Environmental Policy Act (NEPA). These regulations (40 CFR Parts 1500-1508) included a definition of “significant” as used in NEPA. The eleven elements of this definition are critical to reducing paperwork through use of a finding of no significant impact (FONSI) when an action would not have a significant effect on the human environment, and is therefore exempt from requirements to prepare an environmental impact statement (EIS). Significance as used in NEPA requires considerations of context and the ten elements of intensity as follows:

**(a) Context: Significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, affected interests, and the locality. Significance varies with setting. In the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.**

The context of the proposed action is limited to minor, local, short-term effects within the area. No significant effects, either long or short term, regional or societal, are anticipated.

The local context of the proposed action is limited to the northwestern portion of the Tahoe National Forest, in locations shown on the attached maps (See Appendix A). The TNF is comprised of approximately 800,000 acres of national forest land. This project's area represents less than one percent of the total Forest landbase. Project activities would occur over a relatively short time period, with the mechanized portion of the trail construction, in all probability, limited to a three year contract. Other project activities would, most likely, all be completed within three to five years of the decision. Also, all these tasks are done seasonally, not year-round. Thus, in terms of the affected area, the proposed action affects a very small portion of the landbase over a relatively short timeframe. Even in the context of seasonality and duration of activities, analyses prepared for this EA (Biological Evaluations, Management Indicator Species Assessment, Weed Risk Assessment, Cumulative Watershed Effects Analysis, Riparian Conservation Objectives analysis, Riparian Conservation Area guidelines, soils

analysis, and Recreation Report hereby incorporated by reference, and available on request) indicate that the proposed action would not pose significant short- or long-term effects on forest resources.

**(b) Intensity:** Refers to the severity of impact, ... and the following ten elements should be considered in evaluating intensity:

**1. Impacts both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.**

Effects determinations are summarized in supporting analysis documents and/or in the remaining sections of this chapter. All analyses prepared in support of this document considered both beneficial and adverse effects, but all effects determinations were made on the basis of only adverse effects. The direct and indirect effects are discussed below. (Cumulative effects are addressed in intensity item 7).

## **Recreation:**

The information provided in this section is summarized from the Recreation Report prepared for the Yuba Trails Enhancement Project, which is hereby incorporated by reference. The complete Recreation Report is available in the Yuba Trails Enhancement Project Record.

**Direct and Indirect Effects - Alternative A** - This alternative should result in enhanced recreation opportunities and experience to motorcyclists, Mt. bikers and hikers; as well as providing additional outfitter & guiding opportunities. This enhanced experience would come from providing an all single-track trail connection from the top of the Downieville Downhill and the town of Downieville. The sustainable re-routes would provide a more enjoyable experience and connects riders to a larger network of multiple-use single-track trails. For motorcycle, mountain bike and hiking user groups, the experience of traveling on single-track trails cannot be replicated by traveling on roads, as roads do not provide near the same quality narrow trail experience these user groups seek.

**Direct and Indirect Effects - Alternative B** - Under the No Action Alternative, the Yuba Trails Enhancement would not be constructed. There would be no additional impacts to recreation.

## **Soils and Hydrology:**

The information provided in this section is summarized from the Soils and Hydrology Report prepared for the Yuba Trails Enhancement Project, which is hereby incorporated by reference. The complete Soils and Hydrology Report is available in the Yuba Trails Enhancement Project Record.

The Tahoe National Forest Land and Resource Management Plan (LRMP 1990), as amended by the Sierra Nevada Forest Plan Amendment (SNFPA 2004), provides direction for maintaining water quality and quantity; protecting streams, lakes, wetlands, and riparian conservation areas; and to prevent excessive, cumulative watershed impacts.

For the soil resource assessment, the analysis area is bounded by the proposed trail alignment, where the potential ground disturbing activities are proposed. The effects are bounded in time with the existing condition assessing past and present and the proposed action alternatives and the soil condition following implementation are the foreseeable future actions on these activity areas.

Applying the Forest Plan Standards and Guidelines and effective Best Management Practices (BMPs) reduce the magnitude of the effects to soil, water, and aquatic resources. The primary concern to water quality is the impairment of beneficial uses due to an increase of fine sediment caused by accelerated erosion from the proposed project. These impacts are currently occurring on trail sections proposed for decommissioning and rehabilitating these sections would decrease impacts to water quality. Proposed construction of new trail reroute sections would have a low risk of direct effects to water quality because BMPs, trail construction standards (Appendix C), and management requirements would be followed to limit tread wear, accelerated erosion, and impacts to water quality. These same BMPs and trail construction standards were used on the Butcher Ranch Connector trail and have been successful and limiting tread wear, accelerated erosion, and impacts to water quality.

Effectiveness of the BMPs in mitigating direct and indirect effects is largely related to proper implementation and the magnitude of climatic events the first several seasons after project completion. There is a risk that heavy precipitation or rain on accumulations of snow could overwhelm erosion control structures and render them ineffective. The increased sediment delivery to channels would occur only during rare events and for short periods of time where overland flow from disturbed areas occurs. BMPs have been selected using specific information regarding soil, slope, geology, and climate conditions typically found in the project area.

The following section describes the effects of the proposed project (Alternative A) in terms of direct and indirect effects.

### **Direct and Indirect Effects - Alternative A**

**Soils** - Soil desired conditions would not be met on approximately 5 acres due to trail construction. Trail construction would remove the top few inches soil and compact the trail tread surface. By design, topsoil would be removed during trail construction and the trail tread would consist of the more resilient subsurface horizons. This would directly decrease soil productivity and would be a long term impact because continued maintenance would remove encroaching vegetation and soil would remain compacted as trail use continues.

The potential for soil erosion would increase once soil cover is removed. The trail would be designed to limit steep slopes and provide for natural drainage. Therefore, accelerated erosion is expected to be minimal. Both the North Fork Yuba trail and Butcher Ranch Connector trail traverses steep slopes and were constructed with similar design standards to the proposed Yuba Trails Enhancement. Tread wear, accelerated erosion, and impacts to water quality are very minimal on the both trails and it is expected the proposed Yuba Trails Enhancement would have similar low rates of erosion.

**Hydrology** - Proposed trail construction could result in minor amounts of sediment entering Rattlesnake Creek, Lavezzola Creek, and Pauley Creek. One low water perennial crossings would occur on the Downie re-route and one on the Lavezzola re-route. Following BMPs would limit the slopes and lengths of the stream crossing approaches to decrease the potential for accelerated erosion and sediment entering the channel. The potential for erosion and sediment entering stream channels would also be reduced by following the trail design standards described in the proposed action, and management requirements.

Trail construction is unlikely to result in major impacts to riparian areas. No major impacts to riparian areas were observed on recently constructed trails.

Compaction of proposed new trail tread surface would decrease soil porosity and permeability, and increase overland flow. Constructing trails with gradients which are less than one-half the hillslope gradient would minimize the diversion potential.

Decommissioned trail sections would be rehabilitated to restore natural contours and sufficient soil cover maintained to limit accelerated erosion.

Beneficial uses of water from the project area watersheds include domestic, municipal, agricultural, and industrial power supply, wildlife and plant habitat, support of cold water ecosystems and aquatic habitats, and contact and non-contact recreation (USDA Forest Service, a). The newly constructed trail is not expected to have major impacts to beneficial uses.

There are no documented springs or seeps long the proposed trail.

### **Direct and Indirect Effects - Alternative B**

Under the No Action Alternative, the Yuba Trails Enhancement would not be constructed. There would be no direct impacts to soil, water quality, or riparian condition. Trail reroute of existing steep sections would not occur and accelerated erosion and tread wear would continue. Existing impacts to water quality from these sections would also occur. Future trail maintenance would continue, yet its unlikely trail condition would be improved on these overly steep sections.

### **Wildlife:**

Information used in assessing effects includes: computer Geographical Information System layers (e.g. Digital Orthophoto Quads, Sierra Nevada Forest Plan Amendment Land Allocations, Forest Vegetation and Disturbance layers for public and private land, streams, roads, California spotted owl and northern goshawk Protected Activity Centers and Home Range Core Areas), aerial photos, survey records and species sighting data. Fish and wildlife species-specific surveys conducted in all or portions of the project area include: California spotted owl and northern goshawk. Site-specific stand data includes field review by biologists, Forest GIS layers and Forest vegetation maps. The spatial area that was used for analysis is all proposed actions buffered by 0.5 miles. This area would account for potential direct effects from project activities of trail construction that would displace or disturb individuals, and adequately account for any habitat alteration or reduction in habitat quality.

The following reports address the direct, indirect, and cumulative effects from the alternatives to wildlife species in detail, and they are incorporated into this EA by reference: (1) Biological Evaluation for Birds, Mammals, Amphibians, Reptiles, Fish, and Invertebrates dated August 4, 2018 and (2) Management Indicator Species Report dated August 4, 2018.

Two trail segments cross perennial creeks (Lavezzola and Downie) that is within the elevational range of the Sierra Nevada yellow-legged frog, a federally endangered species. The proposed projects do not occur within 1 km of suitable breeding habitat, and the closest population is 8 miles to the northwest. Management Requirements are incorporated into this project that include constructing bridges where these trail segments cross these creeks, to protect aquatic habitat. Therefore, this project will not affect the Sierra Nevada yellow-legged frog. There are no additional federally endangered, threatened, proposed species or their habitats that are present in the project area, nor any proposed or designated critical habitat. The Biological Evaluation for this Project has determined that there is no effect from the action alternative to any federally protected species.

The following Region 5 Forest Service Sensitive Species, or their habitat, are present either present or have habitats adjacent to this project: Western bumblebee, California spotted owl, northern goshawk, Pacific marten, Townsend's big-eared bat, and the fringed myotis. The location of the trail re-routes or new segments was planned so that it would minimize effects to wildlife as follows: (1) located further than 0.25 miles of any goshawk or California spotted owl nest or roost, (2) located to minimize and avoid crossing riparian areas, and (3) avoid steep terrain to the extent possible. Surveys for owls and goshawks were conducted following Region 5 protocol for this project to identify any new territories, and where resource conflicts occurred, the location of the trail was adjusted as previously described to minimize adverse effects to forest resources.

A Biological Evaluation has determined that the action alternative: 1) will not affect the bald eagle, great gray owl, willow flycatcher, greater sandhill crane, North American wolverine, pallid bat, California red-legged frog, Lahontan cutthroat trout, western pond turtle, foothill yellow-legged frog, Sierra Nevada yellow-legged frog, Great Basin ramshorn snail, Lahontan lake tui chub, Hardhead, California floater, Black juga snail; and 2) may affect, but will not lead to a trend toward listing of the Western bumblebee, California spotted owl, northern goshawk, Pacific marten, Townsend's big-eared bat, and the fringed myotis.

**Alternative B (No Action)– Direct and Indirect Effects.** The No Action Alternative would not affect threatened, endangered, proposed, or Forest Service Sensitive fish or wildlife species because no project actions would be implemented.

### **Threatened, Endangered, Proposed, or Sensitive Plants and fungi:**

**Alternative A – Direct, and indirect affects -** Implementation of **the Action Alternative** will not affect Forest Service Sensitive species *Astragalus lemmonii*, *Astragalus pulsiferae* var. *coronensis*, *Astragalus webberi*, *Boechera rigidissima* var. *demota*, *Botrychium ascendens*, *Botrychium crenulatum*, *Botrychium lunaria*, *Botrychium minganense*, *Botrychium montanum*, *Bruchia bolanderi*, *Cudonia monticola*, *Cypripedium fasciculatum*, *Cypripedium montanum*, *Dendrocollybia racemosa*, *Erigeron miser*, *Eriogonum umbellatum* var. *torreyanum*, *Fritillaria eastwoodiae*, *Helodium blandowii*, *Ivesia aperta* var. *aperta*, *Ivesia aperta* var. *canina*, *Ivesia sericoleuca*, *Juncus*

*luciensis*, *Lewisia cantelovii*, *Lewisia kelloggii* subsp. *hutchisonii*, *Lewisia kelloggii* subsp. *kelloggii*, *Lewisia longipetala*, *Lewisia serrata*, *Meesia uliginosa*, *Mielichhoferia elongata*, *Monardella follettii*, *Peltigera gowardii*, *Penstemon personatus*, *Phacelia stebbinsii*, *Phaeocollybia olivacea*, *Pinus albicaulis*, *Poa sierrae*, *Pyrrocoma lucida*, and/or *Tauschia howellii* and/or their habitats directly, indirectly, and/or cumulatively.

These determinations are based on local knowledge of these species, professional judgment, buffering *Lewisia kelloggii* subsp. *hutchisonii*, and the following: Lemmon's milkvetch (*Astragalus lemmonii*), Modoc Plateau milkvetch *Astragalus pulsiferae* var. *coronensis*, Webber's milkvetch (*Astragalus webberi*), Galena Creek rock cress (*Boechera rigidissima*), Butte County fritillary (*Fritillaria eastwoodiae*), Sierra Valley ivesia (*Ivesia aperta* var. *aperta*), Dog Valley ivesia (*Ivesia aperta* var. *canina*), Plumas ivesia (*Ivesia sericoleuca*), Santa Lucia dwarf-rush (*Juncus luciensis*), long-petaled leisia (*Lewisia longipetala*), saw-toothed lewisia (*Lewisia serrata*), elongate copper-moss (*Mielichhoferia elongata*), Follett's monardella (*Monardella follettii*), Stebbins phacelia (*Phacelia stebbinsii*), whitebark pine (*Pinus albicaulis*), sticky pyrrocoma (*Pyrrocoma lucida*) and Sierra bluegrass (*Poa sierrae*) do not have known ranges or are not found at elevations that overlap with project area. Bolander's bruchia (*Bruchia bolanderi*), clustered lady's slipper (*Cypripedium fasciculatum*), mountain lady's slipper (*Cypripedium montanum*), starved daisy (*Erigeron miser*), Donner Pass buckwheat (*Eriogonum umbellatum* var. *torreyanum*), Blandow's bog-moss (*Helodium blandowii*), Cantelow's lewisia (*Lewisia cantelovii*), and broad nerved hump moss (*Meesia uliginosa*) do not have suitable habitat found in project area. Upswept moonwort (*Botrychium ascendens*), scalloped moonwort (*Botrychium crenulatum*), common moonwort (*Botrychium lunaria*), Mingan's moonwort (*Botrychium minganense*), western goblin (*Botrychium montanum*), large cudonia (*Cudonia monticola*), branched collybia (*Dendrocollybia racemosa*), Goward's waterfan (*Peltigera gowardii*), closed throated beardtongue (*Penstemon personatus*), olive phaeocollybia (*Phaeocollybia olivacea*), stalked orange peel fungus (*Sowerbyella rhenana*), and Howell's tauschia (*Tauschia howellii*) have suitable habitat found in project area but impacts are not anticipated due to lack of known occurrences within one mile and small scale and scope of indirect impacts to suitable habitat from proposed actions. The project area was not surveyed for the fungus species *Cudonia monticola*, *Dendrocollybia racemosa*, *Phaeocollybia olivacea* and/or *Sowerbyella rhenana* and they may be present in older forest areas. However, an analysis of possible effects to rare fungi based on effects to the habitat components of older mixed conifer plant communities, e.g. forest floor litter/duff, down woody material, and host trees determined possible effects would be minimal.

The only FSS sensitive plant occurrence found near project area is Hutchison's lewisia (*Lewisia kelloggii* ssp. *hutchisonii*). The determination of no effect is based on a) lack of known occurrences within 50 foot buffer, b) management requirements to eliminate effects to nearby occurrences and suitable habitat, c) and the negligible scale and scope of indirect impacts to suitable habitat from proposed actions.

Implementation of the **Action Alternative** will have no effect on the federally threatened, endangered, or proposed botanical species Webber's ivesia (*Ivesia webberi*) or Layne's butterweed (*Packera layneae*) or their designated critical habitat since the project area does not contain potential habitat for them. *Ivesia webberi* is found on the eastside of the Sierra Nevada crest only; and the project area does not contain serpentine/gabbro plant communities and does not have habitat that would support *Packera layneae*.

**Alternative B – Direct, and indirect affects.** The No Action Alternative would not affect threatened, endangered or proposed plants because no project operations would be implemented.

## **2. The degree to which the proposed action affects public health or safety.**

The direct effects of trail construction and maintenance would be that the trails would be safer for travel, and safer for forest visitors, residents, and Forest Service employees.

The proposed actions would have no other effects to public health and safety.

## **3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.**

***Historic/Cultural Resources-*** Archaeological survey of the proposed project area was conducted to determine the potential impacts of project activities on cultural resources in compliance with Section 106 of the National Historic Preservation Act (NHPA).

Under Alternative A, the project has the potential to impact historic and/or prehistoric sites. The project actions have been designed to avoid cultural resources eligible for inclusion in the National Register of Historic Places, with the result that there would be no direct or indirect effects to any cultural resources eligible for inclusion in the National Register. Moreover, an archaeological monitor shall be present for any ground disturbing activities near cultural resources. Project actions would fully comply with the NHPA, and implementing programmatic agreements.

Under Alternative B, the project has no potential to impact historic and/or prehistoric sites.

***Parklands-*** There are no parklands within the project area.

***Prime Farmlands-*** There are no prime farmlands within the project area.

***Wetlands-*** The project area does not contain peatlands or fens. Riparian/wetland plant communities associated with streams, seeps, and springs, if they exist, will be protected during trail construction.

***Wild and Scenic Rivers-*** The Forest Service recommended that the North Yuba River be designated as a recreation and scenic river, pursuant to the Wild and Scenic Rivers Act (*Record of Decision for the Twenty Westside Rivers Wild and Scenic River Study Report and Final Environmental Impact Statement* 1999). The proposed project area runs north, away from the North Yuba River and up slope, and is not visible from populated areas along the North Yuba River or from Highway 49. Visual impacts are expected to be minimal. Implementation of the proposed action would not impact the North Yuba River's outstandingly remarkable values directly, indirectly, or cumulatively.

*Ecologically Critical Areas*- There are no ecologically critical areas within the project area.

**4. The degree to which the effects on the human environment are likely to be highly controversial.**

The effects of this project on the quality of the human environment are not likely to be highly controversial. The project was subject to extensive analysis and planning, in addition to requiring the implementation of best management practices (BMPs), mitigation measures, and management requirements listed elsewhere in this document and in the project record. This has resulted in a limited and focused proposed action, which incorporates public concerns into the proposed action.

**5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.**

The proposed actions are routine tasks implemented on a regular basis by the Tahoe National Forest without incurring significant impacts. The results or effects of these actions on the human environment are predictable and known, based on similar past practices. The management requirements, mitigation measures, and best management practices included in the action alternatives, as described this document and the project record would also reduce and minimize any impacts or risks that might have otherwise been uncertain, unique, or unknown.

**6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.**

The proposed actions or any of the alternatives would not establish a precedent for future actions, nor would it represent a decision in principle about a future consideration for other similar projects. Any future decision to treat the same or adjacent areas would be analyzed separately and on its own merits to determine a course of action. Future projects would require additional site-specific analysis and separate decisions as required under NEPA.

There are no future activities (other than routine trail maintenance) planned within this project.

While this project neither proposes, nor schedules, future actions in any of these areas, this document does not prevent the opportunity for future management actions.

**7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.**

In order to understand the contribution of past actions to the cumulative effects of the proposed action and alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior



human actions and natural events that have affected the environment and might contribute to cumulative effects.

This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. There are several reasons for not taking this approach. First, a catalog and analysis of all past actions would be impractical to compile and unduly costly to obtain. Current conditions have been impacted by innumerable actions over the last century (and beyond), and trying to isolate the individual actions that continue to have residual impacts would be nearly impossible. Second, providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the proposed action or alternatives. In fact, focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one cannot reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, focusing on the impacts of past human actions and risks, while ignoring the important residual effects of past natural events, may contribute to cumulative effects just as much as human actions. By looking at current conditions, we are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects. Third, public scoping for this project did not identify any public interest or need for detailed information on individual past actions. Finally, the Council on Environmental Quality issued an interpretive memorandum on June 24, 2005 regarding analysis of past actions, which states, “agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.”

The cumulative effects analysis in this EA is also consistent with Forest Service National Environmental Policy Act (NEPA) Regulations (36 CFR 220.4(f)) (July 24, 2008), which state, in part:

“CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions. Once the agency has identified those present effects of past actions that warrant consideration, the agency assesses the extent that the effects of the proposal for agency action or its alternatives would add to, modify, or mitigate those effects. The final analysis documents an agency assessment of the cumulative effects of the actions considered (including past, present, and reasonable foreseeable future actions) on the affected environment. With respect to past actions, during the scoping process and subsequent preparation of the analysis, the agency must determine what information regarding past actions is useful and relevant to the required analysis of cumulative effects. Cataloging past actions and specific information about the direct and indirect effects of their design and implementation could in some contexts be useful to predict the cumulative effects of the proposal. The CEQ regulations, however, do not require agencies to catalogue or exhaustively list and analyze all individual past actions. Simply because information about past actions may be available or obtained with reasonable effort does not mean that it is relevant and necessary to informed decision-making. (40 CFR 1508.7)”

For these reasons, the analysis of past actions in this section is based on current environmental conditions.

Design features included in the proposed action would avoid, minimize, or reverse adverse cumulative watershed effects and minimize impacts to rare plants, wildlife, aquatic species, and other sensitive resources to the extent that any residual effects would not be cumulatively significant. Biological Evaluations and a Watershed Effects Report that disclose cumulative effects, as well as direct and indirect effects, are in the project file and available from the Yuba River District office.

### **Evaluation of Cumulative Effects:**

A cumulative effect is the consequence on the environment that results from the incremental effect of the action when added to the effects of other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the other actions and regardless of land ownership on which the actions occur.

#### ***i) Cumulative effects on recreation.***

**Alternative A** – Under Alternative A, it is expected that the proposed trail construction would attract additional motorcyclist, mountain bicyclists and hikers. Use is expected to increase somewhat due to these proposed new single-track trail opportunities and can be based on general population increases through time. This is because the draw to the area for these user groups is predominately based on the overall single-track trail network experiences (mileage and challenges) available, not just the new enhanced trail opportunities being proposed in this project.

**Alternative B – No Action** – Under the No Action Alternative, the Yuba Trails Enhancement would not be constructed. There would be no additional impacts to recreation.

#### ***ii) Cumulative effects on soil.***

**Alternative A** – The cumulative effects assessment area for the soil resource is bounded in space with the proposed activity area, where soil disturbing would take place. The analysis is further bounded in time by the foreseeable future period during which effects of this project could persist as detectable effects and may be short- term or long-term in nature. Past effects are accounted for based on the existing conditions or present time, and discussed in the direct and indirect effects analysis. Reasonably foreseeable future actions are limited to the use of the trail, including tread wear and tread loss due to erosion.

Future tread wear and accelerated erosion are two potential future impacts. These would vary by both climate, season of use, and amount of use. Wet season use can result in tread wear on sections with insufficient drainage where soils remain saturated for extended periods of time. Dry season use can result in stutter bumps, and tread loss due to mechanical dusting, especially when trail use is high. Loosened tread is also lost during winter precipitation and runoff. Both wet and dry season tread wear can result in trail widening as riders avoid the rough or muddy sections. Constructing gradually sloped trail minimizes tread wear caused by breaking. Furthermore, trail monitoring would help to identify problematic sections so that they can be repaired.

Cattle grazing is actively occurring along the upper portions of the proposed route. This can impact tread condition, especially on loamy soils or during wet conditions. For the active grazing allotment, this is not expected to impact more than ¼ mile to ½ mile trail. Based on personal observations, these are usually minor, short term impacts unless deterioration of tread causes tread widening when riders avoid rough sections. By monitoring the trail, these cumulative impacts can be dealt with before resulting in major impacts.

Soil desired conditions would not be met on approximately 8 acres where trail is constructed. Ongoing soil impacts could include tread wear and soil erosion. Based on trail monitoring of similar trails, it is expected future soil impacts would be minimal. Therefore, riparian condition and water quality are expected to remain in good condition.

**Alternative B – No Action** – Under the No Action Alternative, the Yuba Trails Enhancement would not be constructed. There would be no impacts to soil, water quality, or riparian condition.

### *iii) Cumulative watershed effects.*

Ground-disturbing activities can cause both direct and indirect effects that persist through time. The cumulative result of all these effects is the potential to adversely affect downstream beneficial uses of the water. Cumulative watershed effects (CWE) analysis may reveal that even though the proposed activities themselves may not be sufficient to substantially impact the watershed, when analyzed in connection with past and future activities on all ownerships, they may become a cause for concern.

The Pacific Southwest Region (R-5) of the Forest Service has developed a standardized cumulative watershed effects (CWE) analysis (FSH 2509.22) that serves as a surrogate method for determining the risk of delivering excess sediment to streams. This cumulative watershed effects analysis compares: (a) the existing level of land disturbance across all ownerships within a watershed, with (b) an estimate of the upper limit of watershed tolerance to disturbance, referred to as the Threshold of Concern (TOC). The level of land disturbance is measured using Equivalent Roaded Acres (ERAs), whereby all disturbances are equated to an acre of road. The cumulative watershed effects analysis then recovers these disturbances over some period of time following a specified recovery curve. Using this analysis, the calculated ERA of a watershed is compared to the TOC to provide an assessment of the potential for cumulative watershed effects. The TOC is not an exact point at which effects will occur. It is an indicator that a watershed is more susceptible to impacts. As ERA approaches or exceeds the TOC, additional measures are employed to protect and monitor watershed conditions.

The Tahoe National Forest has developed a standard method for determining watershed TOC values. Each watershed is assessed for its ability to withstand erosional processes and handle sediment delivery to stream channels. The assessment is based on climatological, geologic and soils information, on-the-ground surveys of the stream channels and upland areas; and the experience and knowledge of current and previous TNF hydrologists.

ERA coefficients and recovery rates have been developed based on soil monitoring results, literature reviews, and consultation with other hydrologists.

## **Alternative A (Proposed Action)**

An abbreviated Cumulative Watershed Effects analysis was conducted to provide an approximation of cumulative effects for the four HUC7 subwatersheds within the activity area. The sum of road and trail ERAs, and past forest management, mainly the Ruby Helicopter Timber Sale, equates to less than 5 percent of subwatersheds area. At these levels, adverse cumulative watershed effects are unlikely. Because of the low ERAs a complete assessment was not conducted.

It is estimated less than ½ mile trail would be hydrologically connected and dispersed over several HUC7 watersheds, this would have negligible impacts to water quality, riparian condition, and hydrologic function. Equivalent roaded acres were estimated to be less than five percent, and at these levels, adverse cumulative watershed effects are unlikely.

**Alternative B (No Action)** - Under the No Action Alternative, the Yuba Trails Enhancement would not be constructed. There would be no impacts to soil, water quality, or riparian condition.

### ***iv) Cumulative effects on wildlife, aquatic species, and threatened, endangered, or sensitive plant/fungi species.***

*Wildlife /Aquatic species:* Cumulative effects to wildlife consider the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative effects to fish, wildlife, and rare plants are discussed in detail in the following project documents, which are incorporated by reference: (1) Biological Evaluation for Birds, Mammals, Amphibians, Reptiles, Fish, and Invertebrates, (2) Biological Evaluation for Plants and Fungi, and (3) Management Indicator Species (MIS) Assessment. These documents are located in the project file and are available upon request from the Yuba River Ranger District office. The analyses in these documents consider past, present and reasonably foreseeable effects within the analysis area. In general, the cumulative effects analysis area for wildlife varies by species, but in some cases, assessment areas used to analyze effects may expand to include sixth-field watersheds or beyond, to include the home ranges of wide-ranging animals such as forest carnivores, raptors like the California spotted owl and northern goshawk, and deer that may use the project area as a regular part of their home range, or for movement, migration and dispersal.

The following additional factors in this assessment area were considered in the cumulative effects analysis to wildlife:

*Timber harvest and Vegetation Management on Public and Private Lands*— Using a buffer that extends 0.25 mile on either side of the proposed trail segments, vegetation management within National Forest System Lands has not removed or changed the overall vegetation classification types of wildlife habitats within the past 10 years. There are no timber harvest plans or land development projects on private land that would remove or change the current vegetation types on private land in proximity to the trail.

This project would add cumulative effects to wildlife by increasing single-tracked trail motorized route densities in the project area, and subsequently increasing human disturbances and edge effects

within wildlife habitats that are adjacent to the segments of newly re-routed routes. However, the effects from the trail proposals are comparatively small. All new trail locations are located further than 0.25 miles away from important core habitat areas for sensitive species such as the California spotted owl and northern goshawk. Trail re-routes affect a relatively small amount of habitat that is present within the Project Area, which is less than 1% of all affected habitat types that are present in the project area (project MIS report). This project would not cause a downward trend for any MIS species, and implementing BMPs and the project Management Requirements would minimize potential effects to riparian and downstream habitats.

There are no direct or indirect effects to any federally endangered, threatened, or proposed wildlife species, so there are no cumulative effects from this project to federally protected species. As disclosed in the Project Biological Evaluation, the proposed actions would not lead to a trend toward listing for any Region 5 Forest Service Sensitive species—the western bumblebee, California spotted owl, northern goshawk, Townsend’s big-eared bat, and the fringed myotis. As disclosed in the Project MIS Report, none of the action alternatives would alter existing forest-wide trends of the selected MIS species—fox sparrow, mountain quail, California spotted owl, American marten, or northern flying squirrel.

**TES Plant/Fungi species:** The analysis of cumulative effects is limited to the 15.5 miles of geographically distinct proposed re-routes and decommission routes. The scope and scale of impacts on botanical resources are not expected to propagate further than 50 feet from trail prism into the future.

Rare plants with potential habitat in the project area, but not found during on-the-ground surveys would not be cumulatively affected. These include: upswept moonwort (*Botrychium ascendens*), scalloped moonwort (*Botrychium crenulatum*), common moonwort (*Botrychium lunaria*), Mingan’s moonwort (*Botrychium minganense*), western goblin (*Botrychium montanum*), large cudonia (*Cudonia monticola*), branched collybia (*Dendrocollybia racemose*), Goward’s waterfan (*Peltigera gowardii*), closed throated beardtongue (*Penstemon personatus*), olive phaeocollybia (*Phaeocollybia olivacea*), stalked orange peel fungus (*Sowerbyella rhenana*), and Howell’s tauschia (*Tauschia howellii*). This determination is based on negligible impact to suitable habitat in relation to potential habitat found throughout Tahoe National Forest land.

Rare plants with known occurrences near project area would not be cumulatively affected. Hutchison’s lewisia (*Lewisia kelloggii* ssp. *hutchisonii*) is the only known sensitive plant species found near project. The occurrences are found beyond the 50 foot buffer of analysis which management requirements will prevent impacts. No other reasonable foreseeable future action is known for the project area which is located on federal lands.

## **8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places, or may cause loss or destruction of significant scientific, cultural, or historical resources.**

The Yuba Trails Enhancement Project area has been inventoried for cultural resources. The file number for the cultural resource report is R2016051700174 (Epp). Cultural resources would be

managed according to provisions of the National Historic Preservation Act (NHPA) and implementing programmatic agreements (PAs). Adverse effects to cultural resources would be avoided by project design and site avoidance following standard forest practices that have been developed to implement the applicable NHPA provisions.

This action does not adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places.

**9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.**

Biological Evaluations have been completed that include analyses of potential effects to federally listed (endangered, threatened) or proposed species. These reports determine that there are no effects from any of the alternatives to any federally threatened, endangered, or proposed species, or their designated Critical Habitat.

**10. Whether the action threatens a violation of Federal, State, or local law or other requirements imposed for the protection of the environment.**

The action alternative (Alternative A) would not threaten a violation of Federal law or requirements imposed for the protection of the environment. This alternative is fully consistent with the Endangered Species Act (see No. 9 above). Alternative A is fully consistent with the with the Tahoe LRMP (1990) as amended by the Sierra Nevada Forest Plan Amendment Record of Decision (2004); and complies with the National Forest Management Act (NFMA) of 1976. NFMA requires all projects to be consistent with the following elements: (a) resource protection; (b) vegetation manipulation; (c) silvicultural practices; (d) even-aged management; (e) riparian areas; (f) soil and water; and (g) diversity.

**(a) Resource Protection** – The integrated design of Alternative A, including the Management Requirements listed in Chapter II of this EA and detailed in the attached appendices, provide for protection of forest resources, including riparian resources, terrestrial wildlife, aquatic and plant species and their habitat, cultural resources, air quality, soil productivity, and recreational and visual quality resources.

**(b) Vegetation manipulation** – There would be no vegetation manipulation in completion of this project.

**(c) Silvicultural practices** – No timber harvesting would occur on this project.

**(d) Even-aged management** – No group selection harvest or other forms of even-aged management are proposed by the alternatives (Alternatives A (proposed action) and B (no action)).

**(e) Riparian areas** – Sierra Nevada Forest Plan Amendment (SNFPA) guidelines would be applied to the treatment of Riparian Habitat Conservation Areas (RCAs) as appropriate to protect riparian

resources. All the proposed activities in RCAs are designed to minimize disturbance of riparian vegetation, soils, and other aquatic habitat elements.

**(f) Soil and water** – Working cooperatively with the California State Water Quality Control Board, the Forest Service developed pollution control measures, referred to as Best Management Practices (BMPs) that are applicable to National Forest System lands. The BMPs were evaluated by State Water Quality Control personnel as they were applied on site during management activities. After assessment of the monitoring data and completion of public workshops and hearings, the Forest Service’s BMPs were certified by the State and approved by the Environmental Protection Agency (EPA) as the most effective means to control non-point source pollution.

The land treatment measures incorporated into Forest Service BMPs evolved through research and development measures, and have been monitored and modified over several decades with the expressed purpose of improving the measures and making them more effective. On site evaluations of the control measures by State regulatory agencies found the practices were effective in protecting beneficial uses and were certifiable for Forest Service application as their means to protect water quality. The Clean Water Act provided the initial test of effectiveness of the Forest Service non-point pollution control measures by requiring evaluation of the practices by regulatory agencies (State Board and EPA) and the certification and approval of the practices as the “BEST” measures for control.

BMPs are designed to accommodate site-specific conditions. They are tailor-made to account for the complexity and physical and biological variability of the natural environment. In the 1981 Management Agency Agreement between the State Water Resources Control Board and the Forest Service the State agreed that: “The practices and procedures set forth in the Forest Service document constitute sound water quality management and, as such, are the best management practices to be implemented for water quality protection and improvement on NFS lands.” Further the Water Quality Control Plan for the Central Valley Regional Water Quality Control Board states “Implementation of the BMPs, in conjunction with monitoring and performance review requirements approved by the State and Regional Boards, is the primary method of meeting the Basin Plan’s water quality objectives for the activities to which the BMPs apply.”

**(g) Diversity** – Many of the management requirements and/or BMPs are designed to protect soil and water resources and therefore plant and animal habitats. These standard management requirements also contribute to the diversity of the project area by maintaining or enhancing these habitats. In addition, standard management requirements include measures to protect riparian vegetation, snags, down woody debris, unique and sensitive plants and fungi. The action alternative would not change the seral stage in natural stands or reduce habitat quality to a degree that would lead to a trend toward listing for any Forest Service Sensitive species, nor would it alter existing forest-wide trends in habitat for Management Indicator Species. Implementing Forest Plan Standard and Guidelines and Management Requirements (see Chapter II of this EA) for this project would protect Forest Service Region 5 Sensitive species, Tahoe National Forest Management Indicator Species, Watchlist Plants, and limit the spread of noxious weeds and invasive species. All of these protect diversity within the project area.

### ***R5 Forest Service Sensitive Species:***

Direct, indirect, and cumulative effects on fish, wildlife, and rare plants are discussed in detail in the following project documents, hereby incorporated by reference: (1) Biological Evaluation for Birds, Mammals, Amphibians, Reptiles, Fish, and Invertebrates, (2) Biological Evaluation for Plants and Fungi. These documents are located in the project file and available upon request from the Yuba River Ranger District office. Effects on these resources are summarized in this document in Chapter III.

The Biological Evaluations describe in detail these effects by species. The Biological Evaluation contains the following determination statements from implementing Alternative A:

- No effect to the following sensitive wildlife: bald eagle, great gray owl, willow flycatcher, greater sandhill crane, North American wolverine, pallid bat, California red-legged frog, Lahontan cutthroat trout, western pond turtle, foothill yellow-legged frog, Sierra Nevada yellow-legged frog, Great Basin ramshorn snail, Lahontan Lake tui chub, hardhead, or California floater, and the black juga snail.
- It is my determination that the proposed action **will not affect** Hutchison's and Kellogg's lewisia (*Lewisia kelloggii* ssp. *hutchisonii* and ssp. *kelloggii*). My determination is based on a) lack of known occurrences within 50 foot buffer, b) management requirements to eliminate effects to nearby occurrences and suitable habitat, c) and the negligible scale and scope of indirect impacts to suitable habitat from proposed actions.
- It is my determination that the proposed action **will not affect** upswept moonwort (*Botrychium ascendens*), scalloped moonwort (*Botrychium crenulatum*), common moonwort (*Botrychium lunaria*), Mingan's moonwort (*Botrychium minganense*), western goblin (*Botrychium montanum*), large cudonia (*Cudonia monticola*), branched collybia (*Dendrocollybia racemose*), Goward's waterfan (*Peltigera gowardii*), closed throated beardtongue (*Penstemon personatus*), olive phaeocollybia (*Phaeocollybia olivacea*), stalked orange peel fungus (*Sowerbyella rhenana*), and Howell's tauschia (*Tauschia howellii*). My determination is based on: a) lack of any known occurrences within 1 mile and b) small scale and scope of indirect impacts to suitable habitat from proposed actions. No suitable habitat was found for any other TES botanical species.
- It is my determination that the proposed action **will not affect** any other federally threatened, endangered, or proposed botanical species. My determination is based on the lack of any T&E botanical species occurrences and the absence of suitable habitat known within the project area.
- May affect, but is not likely to result in a trend toward federal listing or loss of viability for the following sensitive wildlife: Western bumblebee, California spotted owl, northern goshawk, Pacific marten, Townsend's big-eared bat, and the fringed myotis.



### ***Nonnative Invasive Plant (NNIP) Risk Assessment:***

No NNIP infestations were found in the project area. The overall NNIP risk for the project is low due to lack of known invasive plant populations in the vicinity of 1 mile and project management requirements that reduce risk of invasive plant introduction. However, implementation of Alternative 1 will increase the risk of nonnative invasive plant (NNIP) introduction over the long term by creating a pathway where tires can introduce NNIP seed.

### ***Management Indicator Species:***

A Management Indicator Species (MIS) Assessment has been completed for this project. This report is incorporated by reference and available from the Yuba River District office upon request. The following MIS were selected for analysis for this project from the list of MIS identified in the Tahoe National Forest Land and Management Plan: fox sparrow, mountain quail, California spotted owl, American marten, and the northern flying squirrel. This project would The MIS analysis concluded that the effects of the alternatives would not alter existing bioregional-scale trends of these MIS.

### ***Watchlist Plants:***

There are no watchlist occurrences or other botanical resources within the project area. No impacts are anticipated from proposed trail re-route and decommission.

### ***East and West Yuba Inventoried Roadless Areas:***

#### ***Roadless area characteristics.***

Resources or features that are often present in and characterize inventoried roadless areas, including:

- (1) High quality or undisturbed soil, water, and air;
- (2) Sources of public drinking water;
- (3) Diversity of plant and animal communities;
- (4) Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species; dependent on large, undisturbed areas of land;
- (5) Primitive, semi-primitive non-motorized and semi-primitive motorized classes of dispersed recreation;
- (6) Reference landscapes;
- (7) Natural appearing landscapes with high scenic quality;
- (8) Traditional cultural properties and sacred sites; and
- (9) Other locally identified unique characteristics.

To address the Roadless Area characteristics, each resource specialist completed on the ground surveys to determine if any values were at risk.

1. The project will address steep eroding roads and trails within East and West Yuba IRA by closing 5 miles of steep trails and 3 miles of unauthorized routes.
2. The project does not interfere directly with any public drinking water.

3. All project activities avoided disrupting plant and animal communities.
4. The habitat for threatened, endangered, proposed, candidate and sensitive species were avoided.
5. All project activities fit within the Roadless Areas ROS classes.
6. No reference landscapes.
7. Natural appearing landscapes will be higher quality now by removing road and replacing steep/wide trails with narrow single track connections.
8. All cultural properties were avoided.
9. No other local characteristics were identified.

## **Agencies and Others Consulted**

**The Scoping letter was mailed on 12/20/17 to the following:**

Martin J. Ward  
Jacquelyne 'Bebe' Theisen  
Gold Country Trails Council  
Forest Trails Alliance  
BONC  
YBONC Foundation  
Nevada County Woods Riders  
Sierra Buttes Trail Stewardship  
Friends of Foresthill OHV Trails  
High Sierra Motorcycle Club  
Merced Dirt Riders  
BlueRibbon Coalition, Inc  
Cal Enduro Riders Assoc  
Garrahan Off-Road Racing  
Ghost Riders MC  
North Bay Motorcycle Club  
NorCal Motorcycle Club  
Redding Dirt Riders  
Salina Ramblers Motorcycle Club  
Peter Huebner & Lee Adams  
Sierra County Board of Supervisors  
Tim Beals-Sierra County  
Brandon Pangman- Sierra Co Planning  
Gail Hart  
Mark Hart

**Scoping responses/requests were received from:**

Don Amador- Blue Ribbon Coalition  
Greg Williams- Sierra Buttes Trail Stewardship

## **Additional Comments**

### **Documents Incorporated By Reference, and/or Available Upon Request, or Attached as Appendices**

Project Maps (*Appendix A*)

Responses to Public Scoping Comments (*Appendix B*)

Cumulative Watershed Effects Analysis (*incorporated in Hydro/Soils Report*)

Riparian Conservation Area Guidelines (*incorporated in Hydro/Soils Report*)

Trail Construction BMPs (*Appendix C*)

Cultural Resources Report (*Administratively confidential*)

Management Indicator Species (MIS) Assessment (*in Project File*)

Plant and Animal Biological Evaluations (*in Project File*)

Other References/Citations (*in Project File*)

Tahoe National Forest Sensitive Plant Standards and Guidelines (*Incorporated by Reference*)

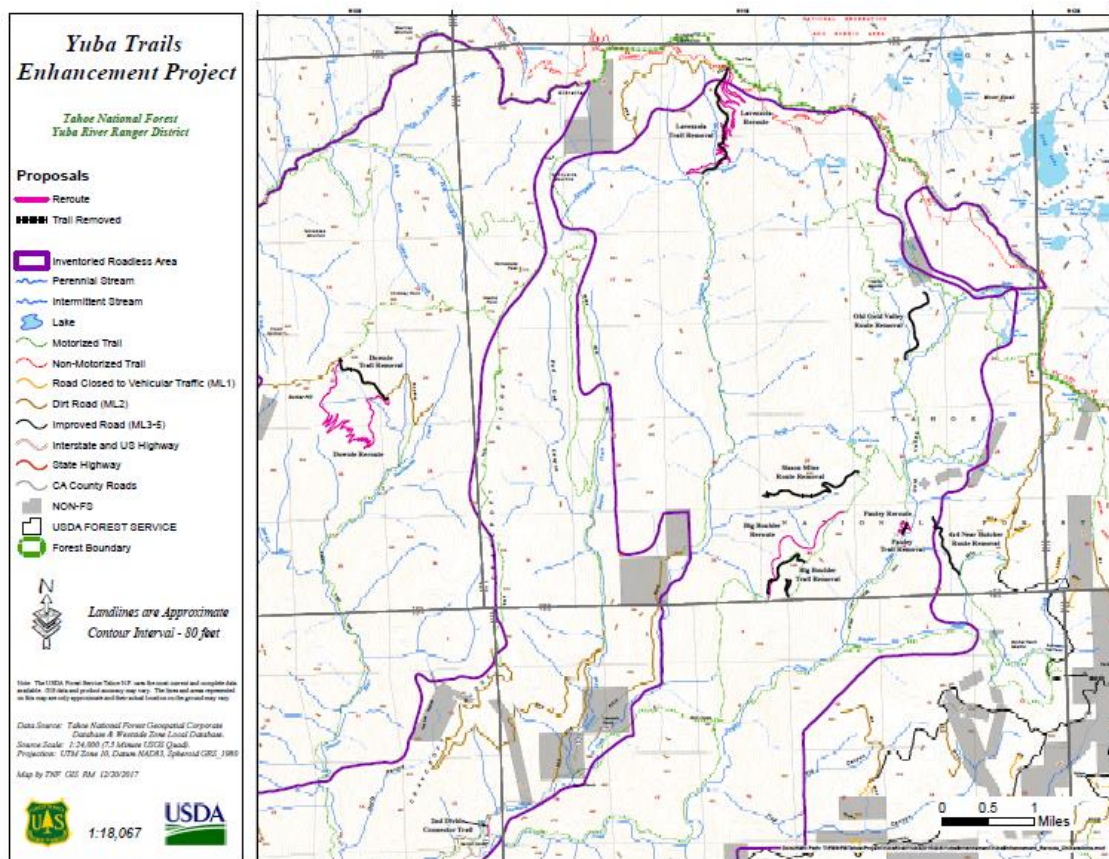
Hydrology/Soils Report (*in Project File*)

Watchlist Plant and Plant Community Report (*in Project File*)

Weed Risk Assessment (*in Project File*)

# **Appendix A**

## **Maps**



# **Appendix B**

## **Responses to Scoping Comments**

## **Yuba Trails Enhancement Project Scoping Comments (and Issues)**

An issue is a point of debate, dispute, or disagreement regarding anticipated effects of the proposed action. Issues have a cause-effect relationship to the actions under consideration. An issue statement describes a specific action and the environmental effect(s) expected to result from that action. Issues serve to highlight effects or unintended consequences that may occur from the proposed action and alternatives, giving opportunities during the analysis to reduce adverse effects and compare trade-offs for the decision maker and public to understand. Issues are identified during scoping early in the process to help set the scope of the actions, alternatives, and effects to consider.

Typically, public scoping comments include many non-issue comments and questions. Any non-issues are identified as such, here, and are not mentioned in the EA. Important issues, if identified as such here, are addressed in the EA. Other issues have an explanation of why they are not specifically addressed in the EA.

Two letters of comment were received.

For ease of responding to these comments or issues, each respondent has been issued a number for ease of identification: 1– Don Amador, Blue Ribbon Coalition; 2- Greg Williams, Sierra Buttes Trail Stewardship. Issues within the letters are sequentially numbered (i.e. 1-1, 1-2, 2-1, etc.).

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### **Comment 1-1:**

“Please accept this letter from the Blue Ribbon Coalition/Sharetrails.org (BRC) that states our strong support for the Yuba Trails Enhancement Project as outlined in your December 20, 2017 scoping document.

BRC believes the Project is important to the public since it will help ensure that critical resources are protected so that OHV recreationists will continue to have access to the Forest’s high-quality multiple-use trail system.

BRC also commends the District’s OHV management team for their ongoing commitment to sustainable OHV recreation management practices.”

**Response:** Thanks for the support. The Yuba River Ranger District will be sure to keep the Blue Ribbon Coalition on our mailing list for future updates on this project.

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**Comment 2-1:** “SBTS is in support of the four proposed Trail Re-routes and the Connector Trail from Second Divide Trail. We are however disappointed to see that the proposed ridge top trail (Divide 2.5 Trail), located between Second and Third Divide trails, has been removed from the project proposal. The proposed Divide 2.5 Trail would have provided much-needed and legal OHV connectivity from the town of Downieville to the trail system. Currently, OHV riders are forced to ride illegally on Lavezzola Road, which is managed by Sierra County. Divide 2.5 Trail would also help to reduce user traffic on the very popular Second and Third Divide trails.”

**Response:** The proposed connection from Second Divide will provide the needed legal OHV connection, which will avoid Lavezzola Road. The proposed ridge top Divide 2.5 was removed from the project due to the habitat for raptors and Northern Spotted Owls.

**Comment 2-2:** “If Divide 2.5 Trail is not a viable option, we would still like to see a Connector Trail from Third Divide to First Divide Trail. This Connector Trail would provide a legal OHV connection and improve public safety by keeping motorcycle riders off Lavezzola Road, which has several blind and high speed corners.”

**Response:** The connection from Third Divide to First Divide trail was not part of the original project proposal. This connection would provide a needed legal connection from the bottom of Third Divide to First Divide, but the proposed Second Divide Connection provides a legal opportunity for non-street legal motorcyclist to the trail head at the bottom of First Divide trail. The proposed Third Divide connection would need to be flagged for the initial trail alignment and then evaluated by the specialist.

**Comment 2-3:** “SBTS does not support the Unauthorized Route Restoration of the Old Gold Valley route. This historic route is still regularly used by the recreating public to connect Hawley Meadow with Gold Valley. We do realize that this route was not approved as part of Travel Management and is not legal for OHV use, however we are requesting that the Old Gold Valley route remain open for non-motorized recreation. We feel that limiting use to non-motorized can be achieved by adding proper signage and a gate or barricades at the upper and lower terminus of the route.”

**Response:** The Forest understands that this is the historic route through Hawley Meadow with Gold Valley. The proposed plan is to block vehicular access. This could be accomplished with signage and barriers as this is an important recreational opportunity in the area for hikers and mountain bikers.

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## **Appendix C**

### **Trail Construction Manual Directions, Processes, and Construction Standards**

## **SUPPORTING NARRATIVE FOR NEW TRAIL CONSTRUCTION**

### **FSM Direction for OHV Trails, Roads and Soil & Water Conservation**

The following information is from the Forest Service Manual (FSM) that gives the appropriate direction for roads, OHV trails, and soil & conservation management.

#### ***FSM 2300—Recreation, Wilderness, and Related Resource Management***

##### ***2353.12 - Trail Management Objectives (TMOs)***

Manage each trail to meet the TMOs identified for that trail, based on applicable land management plan direction, travel management decisions, trail-specific decisions, and other related direction, as well as management priorities and available resources. For each NFS trail or NFS trail segment, identify and document its TMOs, including the five Trail Fundamentals, Recreation Opportunity Spectrum classifications, design criteria, travel management strategies, and maintenance criteria.

##### ***2353.25 - Development, Reconstruction, Maintenance, and Decommissioning***

1. Follow the direction in FSH 2309.18, Trails Management Handbook, chapters 10 and 20, when developing, reconstructing, or maintaining trails.
2. Consider available resources and maintenance costs when deciding to construct new trails, reconstruct existing trails, or convert other types of routes to NFS trails.
3. Consider decommissioning trails when alternative routes are available.

#### ***R5 FSH 2509-22 Soil and Water Conservation Handbook- Planning***

**Objective:** To use the travel management planning processes, including travel analysis, to develop measures to avoid, minimize, and mitigate adverse impacts to water, aquatic, and riparian resources during trail management activities, and to identify restoration for damaged areas and trails not designated for use.

**Explanation:** The amount, type, and location of trails are determined through various planning processes. OHV trail planning includes travel analysis as well as trail management at the project level. Planning occurs at scales that can range from forestwide assessments and plans, to watershed-scale analyses, to project-level trail activities. During planning, potential effects on water, and on aquatic and riparian resources are identified, and protection and mitigation measures are proposed.

Trail management objectives are developed to define the type of recreation experience each trail is designed to provide, and to provide direction on management of the trail. In addition to guiding trail management at the site-specific scale, TMOs also document Forest-wide trail maintenance needs and identify the potential for environmental effects and conflicts with other resources.

The risk from OHV trail management activities can be reduced by using the appropriate techniques from the following list, adapted as needed to local site conditions.

## **Trail Construction Process**

### ***Project Assessment***

When a trail is proposed, the project is reviewed for a wide range of considerations, including but not limited to environmental, cost, and access. This project has a high level of support and will provide an important link between existing trail corridors, and is near a major population area.

### ***Corridor Reconnaissance***

Extensive “recon” of the available area will occur to record desirable features or hazards that will assist in the final selection of a trail corridor.

### ***Corridor Proposal***

Assessment of data collected during recon are applied and utilized to flag a proposed trail corridor. The corridor represents an area of study for environmental consideration. Usually a corridor may span 100-300ft of width which the final alignment may use.

### ***Corridor Preparation***

Minimal brushing and clearing is done to facilitate travel of staff working on the environmental review. No groundwork is done at this time committing the corridor for use.

### ***Trail Prescription prepared***

The proposed alignment is measured and staked at 100ft intervals. This is used to create a profile of the trail to detail placement of prescriptions like culverts, vista points, benches, signs, rockwork or other special details. Special features are individually detailed and listed to support planning for material and labor.

### ***Rough Construction***

Clear the rough bench for the trail. Chainsaw, (small) excavator and skid steers are utilized during this part of the project.

### ***Finish Construction***

USFS and project volunteers begin finish grading and pruning of the trail. Debris and brush are cleared from trail vicinity.

### ***Feature development***

Prescription elements, like rockwork, bridges, culverts, benches etc. are facilitated by trail leaders and volunteers.

## **Trail Construction Standards**

### ***General***

Trail work will occur through the use of hand work or by qualified machine operators approved by USFS. Any trail work other than standard maintenance will be approved by the recreation officer prior to commencement. The following standards are consistent the FSM direction for trails and the Trail Construction Handbook.

### ***Standards***

- Average Grade Pitch: 5% ( within aprox. 100ft or overall segment) grade reversal every 100-200ft
- Moderate duration pitches (50ft): 15% max, include grade reversal or out-slope feature
- Short steep slopes (25ft): 25% max, include grade reversal or out-slope feature
- The intent on pitch limiters is to create sustainable trail, volume of usage, soil or surface type; hydrology and user types may affect design standards. Steeper segments may be approved with hardened bench elements.
- Bench Width: 24" - 36"
- Clearance from trail center: 30" for general obstructions
- Brush removal from trail center: 5ft
- Height clearance: 7ft

### ***Guidelines for preventing Resource Damage***

- Build on side slopes
- Avoid ridge-top or fall line alignments
- Stay out of meadows or flatlands where drainage is poor
- Favor the upslope of trees to prevent root damage
- Build mild, undulating trail alignment that utilizes frequent grade reversals
- Out-slope bench when possible
- Camber outside of turns to minimize lateral wear
- Avoid over-pitch alignments
- Create good sight lines
- Design intuitive trail alignments

### ***Creek or ephemeral drainage crossings***

- Locate crossings at stable locations
- Trail at crossing should always be at least 12+ inches lower than approach from either side
- Harden active crossings with cobbled rock to minimize creek disturbance
- If a bridge is used, construct so freeboard is above 100 year mark
- If bridge footings are within 100 year mark, embed into embankment 2ft or more to avoid high water scouring

### ***Difficulty classifications***

- All trails will be multi-use, non-motorized trails unless otherwise identified
- Trails are described as easy or moderate depending on elevation gain or length.
- Short, difficult trails will be limited to provide a maximum of trail opportunities.
- Short duration difficult trails that have excess pitch will be hardened to avoid erosion.
- All trails may include technical side-sections called B routes.

### ***Switchbacks and Rolling Turns***

- Provide grade reversals within 50ft of both sides of turn and stage so that lower grade reversals catch upper drainage runoff.
- Rolling turns have radius's in excess of 4ft tc (trail center) and occur on slopes which are less than 30%
- Switchbacks have radius's of less than 4ft tc and occur on slopes greater than 30%
- Anticipate approaches to turns and design speed reduction to eliminate skid bumps
- Keep overall switchback radius bench at 5-10% max to minimize wear
- If cambering turn, leave flat climbing radius towards center
- Locate turn in spot that limits short cutting
- Separate trails from each other as early as possible

### ***Rolling dips, Grade Reversals or Drain Dips***

- Downhill rise should be 6-12" above low point
- Features should be 10-20 ft in length for smooth transitions
- Place at all ephemeral (rarely active) or seasonal drainages

### ***Bermed Turns***

- Confirm all turns drain by splitting or tilting the turn on the slope
- Leave un-cambered inside space for hiking or uphill riding